Department of Homeland Security

Countering Weapons of Mass Destruction

Budget Overview

Fiscal Year 2023

Congressional Justification

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Countering Weapons of Mass Destruction
Appropriation Organization Structure

	Level	Fund Type (* Includes Defense Funding)
Countering Weapons of Mass Destruction	**Component**	
Operations and Support	**Appropriation**	
Mission Support	PPA	Discretionary - Appropriation
Capability and Operational Support	PPA	Discretionary - Appropriation
Procurement, Construction, and Improvements	**Appropriation**	
Large Scale Detection Systems	PPA	
Radiation Portal Monitor Program (RPMP)	Investment,PPA Level II	Discretionary - Appropriation
Radiation Portal Monitor Replacement Program (RPM RP)	Investment,PPA Level II	Discretionary - Appropriation
International Rail (IRAIL)	Investment,PPA Level II	Discretionary - Appropriation
Common Viewer	Investment,PPA Level II	Discretionary - Appropriation
Radiation Portal Technology Enhancement and Replacement Program (RAPTER)	Investment,PPA Level II	Discretionary - Appropriation
Next Generation Mobile	Investment,PPA Level II	Discretionary - Appropriation
Border Patrol Checkpoint Program	Investment,PPA Level II	Discretionary - Appropriation
Portable Detection Systems	PPA	
Personal Radiation Detector	Investment,PPA Level II	Discretionary - Appropriation
Basic Handheld RIIDs	Investment,PPA Level II	Discretionary - Appropriation
Rapid CBRN Equipping	Investment,PPA Level II	Discretionary - Appropriation
Portable Detection Equipment End Items	Investment,PPA Level II	Discretionary - Appropriation
Backpack SLEP	Investment,PPA Level II	Discretionary - Appropriation
Biological Detection for the 21st Century (BD-21)	Investment,PPA Level II	Discretionary - Appropriation
Integrated Operations Assets and Infrastructure	PPA	
Medical Information Exchange (MIX)	Investment,PPA Level II	Discretionary - Appropriation
Research and Development	**Appropriation**	
Transformational Research and Development	PPA	
Transformational Research and Development	R&D Project,PPA Level II	Discretionary - Appropriation
Technical Forensics	PPA	
Technical Forensics	R&D Project,PPA Level II	Discretionary - Appropriation
Detection Capability Development	PPA	

Detection Capability Development	R&D Project,PPA Level II	Discretionary - Appropriation
Rapid Capabilities	PPA	
Rapid Capabilities	R&D Project,PPA Level II	Discretionary - Appropriation
Federal Assistance	**Appropriation**	
Training, Exercises, and Readiness	PPA	Discretionary - Appropriation
Securing the Cities	PPA	Discretionary - Appropriation
Biological Support	PPA	Discretionary - Appropriation

Countering Weapons of Mass Destruction
Budget Comparison and Adjustments
Appropriation and PPA Summary
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 Annualized CR	FY 2022 President's Budget	FY 2023 President's Budget
Operations and Support	**$179,892**	**$179,892**	**$157,200**	**$151,970**
Mission Support	$82,927	$82,927	$85,316	$85,570
Capability and Operational Support	$96,965	$96,965	$71,884	$66,400
Procurement, Construction, and Improvements	**$87,413**	**$87,413**	**$71,604**	**$55,304**
Large Scale Detection Systems	$60,798	$60,798	$53,667	$46,237
Radiation Portal Monitor Program (RPMP)	$31,951	$31,951	$36,413	$24,042
Radiation Portal Monitor Replacement Program (RPM RP)	$21,341	$21,341	$615	$651
International Rail (IRAIL)	$7,506	$7,506	$16,639	$9,665
Next Generation Mobile	-	-	-	$11,879
Portable Detection Systems	$26,615	$26,615	$14,937	$9,067
Personal Radiation Detector	$16,044	$16,044	$500	$80
Basic Handheld RIIDs	$5,000	$5,000	$3,406	$2,500
Rapid CBRN Equipping	$2,032	$2,032	$8,531	$5,000
Portable Detection Equipment End Items	$3,539	$3,539	-	-
Backpack SLEP	-	-	$2,500	-
Biological Detection for the 21st Century (BD-21)	-	-	-	$1,487
Integrated Operations Assets and Infrastructure	-	-	$3,000	-
Medical Information Exchange (MIX)	-	-	$3,000	-
Research and Development	**$65,309**	**$65,309**	**$65,709**	**$82,515**
Transformational Research and Development	$23,892	$23,892	$31,378	$37,004
Transformational Research and Development	$23,892	$23,892	$31,378	$37,004
Technical Forensics	$7,100	$7,100	$3,500	-
Technical Forensics	$7,100	$7,100	$3,500	-
Detection Capability Development	$24,317	$24,317	$30,831	$45,511
Detection Capability Development	$24,317	$24,317	$30,831	$45,511
Rapid Capabilities	$10,000	$10,000	-	-
Rapid Capabilities	$10,000	$10,000	-	-
Federal Assistance	**$69,663**	**$69,663**	**$132,948**	**$139,183**
Training, Exercises, and Readiness	$14,470	$14,470	$19,251	$19,559
Securing the Cities	$24,640	$24,640	$30,040	$34,628
Biological Support	$30,553	$30,553	$83,657	$84,996
Total	**$402,277**	**$402,277**	**$427,461**	**$428,972**

Countering Weapons of Mass Destruction
Comparison of Budget Authority and Request
(Dollars in Thousands)

	FY 2021 Enacted			FY 2022 President's Budget			FY 2023 President's Budget			FY 2022 to FY 2023 Total Changes		
	Pos.	FTE	Amount	Pos.	FTE	Amount	Pos.	FTE	Amount	Pos.	FTE	Amount
Operations and Support	287	267	$179,892	309	279	$157,200	269	252	$151,970	(40)	(27)	($5,230)
Procurement, Construction, and Improvements	-	-	$87,413	-	-	$71,604	-	-	$55,304	-	-	($16,300)
Research and Development	-	-	$65,309	-	-	$65,709	-	-	$82,515	-	-	$16,806
Federal Assistance	-	-	$69,663	-	-	$132,948	-	-	$139,183	-	-	$6,235
Total	**287**	**267**	**$402,277**	**309**	**279**	**$427,461**	**269**	**252**	**$428,972**	**(40)**	**(27)**	**$1,511**
Subtotal Discretionary - Appropriation	287	267	$402,277	309	279	$427,461	269	252	$428,972	(40)	(27)	$1,511

Component Budget Overview

The FY 2023 Budget includes $429.0M; 269 positions; and 252 full-time equivalents (FTE) for the Countering Weapons of Mass Destruction Office (CWMD). This funding level represents a decrease of 40 positions and 27 FTE, and an increase of $1.5M above the FY 2022 President's Budget.

CWMD was established by the *Countering Weapons of Mass Destruction Act of 2018* to elevate and focus counter-WMD missions for the Department and to provide a focal point for the interagency. CWMD's mission is to enhance and coordinate DHS strategic and policy efforts with Federal, State, local, tribal, and territorial (FSLTT) governments and the private sector to prevent WMD use against the Homeland and promote readiness against chemical, biological, radiological, nuclear and health security threats. CWMD enhances the ability of high-risk urban areas across the United States to detect and prevent terrorist attacks using nuclear or other radiological material. CWMD is responsible for the development and implementation of the Global Nuclear Detection Architecture (GNDA), as well as coordination and support for DHS chemical and biological defense activities. In FY 2023, funding for the Chief Medical Officer (CMO) will transfer to the Office of Health Security and Resilience (OHSR) within the Office of the Secretary and Executive Management (OSEM).

The FY 2023 Budget balances the requirements of DHS Components, State and local partners, and the CWMD foundational activities that coordinate, strengthen, and deliver capabilities to reduce the threat posed by weapons of mass destruction. CWMD will continue BioWatch, the National Biosurveillance Integration Center (NBIC), and the Radiation Portal Monitor Program. CWMD will strengthen capabilities planning and risk assessments to optimize and focus efforts to understand, anticipate, and mitigate the risk from chemical, biological, radiological, nuclear (CBRN).

Countering Weapons of Mass Destruction
Budget Authority and Obligations
(Dollars in Thousands)

	FY 2021	FY 2022	FY 2023
Enacted/Request	**$402,277**	**$427,461**	**$428,972**
Carryover - Start of Year	$177,240	$124,801	$38,204
Recoveries	$12,967	-	-
Rescissions to Current Year/Budget Year	($1,104)	($351)	-
Net Sequestered Resources	-	-	-
Reprogramming/Transfers	$21,104	$351	-
Supplementals	-	-	-
Total Budget Authority	**$612,484**	**$552,262**	**$467,176**
Collections - Reimbursable Resources	$11,695	$488	$488
Collections - Other Sources	-	-	-
Total Budget Resources	**$624,179**	**$552,750**	**$467,664**
Obligations (Actual/Estimates/Projections)	$497,469	$513,363	$413,611
Personnel: Positions and FTE			
Enacted/Request Positions	287	309	269
Enacted/Request FTE	267	279	252
Onboard and Actual FTE			
Onboard (Actual/Estimates/Projections)	258	309	269
FTE (Actual/Estimates/Projections)	249	279	252

Countering Weapons of Mass Destruction
Collections – Reimbursable Resources
(Dollars in Thousands)

	FY 2021 Enacted			FY 2022 President's Budget			FY 2023 President's Budget		
	Pos.	**FTE**	**Amount**	**Pos.**	**FTE**	**Amount**	**Pos.**	**FTE**	**Amount**
Department of Health and Human Services - Department Wide	-	-	$1,020	-	-	-	-	-	-
Department of Homeland Security - Federal Emergency Management Agency	-	-	$271	-	-	$271	-	-	$271
Department of Homeland Security - Management Directorate	-	-	$217	-	-	$217	-	-	$217
Department of Homeland Security - Science and Technology	-	-	$150	-	-	-	-	-	-
Department of Homeland Security - U.S. Customs and Border Protection	-	-	$9,500	-	-	-	-	-	-
Department of Homeland Security - U.S. Immigration and Customs Enforcement	-	-	$476	-	-	-	-	-	-
Department of Homeland Security - United States Secret Service	-	-	$61	-	-	-	-	-	-
Total Collections	**-**	**-**	**$11,695**	**-**	**-**	**$488**	**-**	**-**	**$488**

Countering Weapons of Mass Destruction
Personnel Compensation and Benefits

Pay Summary
(Dollars in Thousands)

	FY 2021 Enacted				FY 2022 President's Budget				FY 2023 President's Budget				FY 2022 to FY 2023 Total			
	Pos.	FTE	Amount	Rate	Pos.	FTE	Amount	Rate	Pos.	FTE	Amount	Rate	Pos.	FTE	Amount	Rate
Operations and Support	287	267	$58,085	$191.13	309	279	$60,122	$196.66	269	252	$55,602	$200.38	(40)	(27)	($4,520)	$3.72
Total	**287**	**267**	**$58,085**	**$191.13**	**309**	**279**	**$60,122**	**$196.66**	**269**	**252**	**$55,602**	**$200.38**	**(40)**	**(27)**	**($4,520)**	**$3.72**
Subtotal Discretionary - Appropriation	287	267	$58,085	$191.13	309	279	$60,122	$196.66	269	252	$55,602	$200.38	(40)	(27)	($4,520)	$3.72

Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
11.1 Full-time Permanent	$37,361	$39,326	$36,722	($2,604)
11.3 Other than Full-time Permanent	-	$710	$197	($513)
11.5 Other Personnel Compensation	$462	$505	$560	$55
11.8 Special Personal Services Payments	$7,052	$5,255	$5,107	($148)
12.1 Civilian Personnel Benefits	$13,210	$14,326	$13,016	($1,310)
Total - Personnel Compensation and Benefits	**$58,085**	**$60,122**	**$55,602**	**($4,520)**
Positions and FTE				
Positions - Civilian	287	309	269	(40)
FTE - Civilian	267	279	252	(27)

Countering Weapons of Mass Destruction
Non Pay Budget Exhibits
Non Pay Summary
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Operations and Support	$121,807	$97,078	$96,368	($710)
Procurement, Construction, and Improvements	$87,413	$71,604	$55,304	($16,300)
Research and Development	$65,309	$65,709	$82,515	$16,806
Federal Assistance	$69,663	$132,948	$139,183	$6,235
Total	**$344,192**	**$367,339**	**$373,370**	**$6,031**
Subtotal Discretionary - Appropriation	$344,192	$367,339	$373,370	$6,031

Non Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
21.0 Travel and Transportation of Persons	$2,008	$2,043	$2,008	($35)
23.2 Rental Payments to Others	$518	$518	$393	($125)
23.3 Communications, Utilities, & Miscellaneous	-	$7	$29	$22
24.0 Printing and Reproduction	$55	$55	$48	($7)
25.1 Advisory & Assistance Services	$87,788	$110,240	$102,088	($8,152)
25.2 Other Services from Non-Federal Sources	$18,287	$14,901	$16,080	$1,179
25.3 Other Purchases of goods and services	$38,929	$30,695	$37,046	$6,351
25.4 Operations & Maintenance of Facilities	-	-	$1	$1
25.5 Research & Development Contracts	$36,657	$41,922	$55,291	$13,369
25.7 Operation & Maintenance of Equipment	$7,897	$10,038	$11,284	$1,246
26.0 Supplies & Materials	$15,674	$31,623	$31,319	($304)
31.0 Equipment	$85,682	$75,508	$68,001	($7,507)
41.0 Grants, Subsidies, and Contributions	$50,685	$49,777	$49,770	($7)
94.0 Financial Transfers	$12	$12	$12	-
Total - Non Pay Budget Object Class	**$344,192**	**$367,339**	**$373,370**	**$6,031**

Countering Weapons of Mass Destruction
Supplemental Budget Justification Exhibits

FY 2023 Counter Unmanned Aerial Systems (CUAS) Funding

The FY 2023 Budget for CWMD does not include any dedicated resources for Counter Unmanned Aerial Systems programs.

Countering Weapons of Mass Destruction
Authorized/Unauthorized Appropriations

Budget Activity *(Dollars in Thousands)*	Last year of Authorization	Authorized Level	Appropriation in Last Year of Authorization	FY 2023 President's Budget
	Fiscal Year	Amount	Amount	Amount
Operations and Support	N/A	N/A	N/A	**$151,970**
Mission Support	N/A	N/A	N/A	$85,570
Capability and Operational Support	N/A	N/A	N/A	$66,400
Procurement, Construction, and Improvements	N/A	N/A	N/A	**$55,304**
Portable Detection Systems	N/A	N/A	N/A	$9,067
Large Scale Detection Systems	N/A	N/A	N/A	$46,237
Integrated Operations, Assets, and Infrastructure	N/A	N/A	N/A	-
Research and Development	N/A	N/A	N/A	**$82,515**
Transformational Research and Development	N/A	N/A	N/A	$37,004
Technical Forensics	N/A	N/A	N/A	-
Detection Capability Development	N/A	N/A	N/A	$45,511
Rapid Capabilities	N/A	N/A	N/A	-
Federal Assistance	N/A	N/A	N/A	**$139,183**
Training, Exercises, and Readiness	N/A	N/A	N/A	$19,559
Securing the Cities	N/A	N/A	N/A	$34,628
Biological Support	N/A	N/A	N/A	$84,996
Total Direct Authorization/Appropriation	N/A	N/A	N/A	**$428,972**

The Countering Weapons of Mass Destruction Act of 2018 (P.L. 115-387) (Dec. 21, 2018) authorizing the creation of the CWMD Office did not specify funding levels for the CWMD Office.

Countering Weapons of Mass Destruction
Proposed Legislative Language

Operations and Support

For necessary expenses of the Countering Weapons of Mass Destruction Office for operations and support, [$157,200,000] *$151,970,000*, of which [$35,606,000] *$50,446,000* shall remain available until September 30, [2023] *2024*: Provided, that not to exceed $2,250 shall be for official reception and representation expenses.

Language Provision	Explanation
…[$157,200,000] *$151,970,000,…*	Dollar change only. No substantial change proposed.
…of which [$35,606,000] *$50,446,000* shall remain available until September 30, [2023] *2024…*	Dollar change and fiscal year change. Two-year period of availability for the Capability and Operational Support PPA. The two-year funding is required because of the extended time needed for proper procurement of investment and support activities for data integration, developing complex strategies for risk assessments and capability building across the chemical, biological, radiological, and nuclear security threat spectrum, biosurveillance activities, partnership coordination, and supporting test and evaluation of major equipment procurements.

Procurement, Construction, and Improvements

For necessary expenses of the Countering Weapons of Mass Destruction Office for procurement, construction, and improvements, [$71,604,000] *$55,304,000,* to remain available until September 30, [2024] *2025*.

Language Provision	Explanation
…[$71,604,000] *$55,304,000…*	Dollar change only. No substantial change proposed.
…[2024] *2025…*	Fiscal year change only. No substantial change proposed.

Research and Development

For necessary expenses of the Countering Weapons of Mass Destruction Office for research and development, [$65,709,000] *$82,515,000,* to remain available until September 30, [2024] *2025.*

Language Provision	Explanation
…[$65,709,000] *$82,515,000*…	Dollar change only. No substantial change proposed.
…[2024] *2025*…	Fiscal year change only. No substantial change proposed. Based on average time to identify and complete the scope of work for R&D projects, the FY 2023 CWMD R&D account is three-year funding. Three-year funding allows for sufficient time to define research topics, solicit for performer(s), conduct source selection, award contract(s), initiate research, identify technology approaches, conduct repeated refinement of the technological approaches and demonstrate the technology in the relevant operational environment.

Federal Assistance

For necessary expenses of the Countering Weapons of Mass Destruction Office for Federal assistance through grants, contracts, cooperative agreements, and other activities, [$132,948,000] *$139,183,000*, to remain available until September 30, [2024] *2025*.

Language Provision	Explanation
…[$132,948,000] *$139,183,000*…	Dollar change only. No substantial change proposed.
…[2024] *2025*	Fiscal year change only. No substantial change proposed.

Department of Homeland Security

Countering Weapons of Mass Destruction

Strategic Context

Fiscal Year 2023

Congressional Justification

Countering Weapons of Mass Destruction
Strategic Context
Component Overview

The Countering Weapons of Mass Destruction Office (CWMD) works to prevent attacks against the United States using weapons of mass destruction through timely and responsive support to operational partners.

The strategic context presents the performance budget by tying together programs with performance measures that gauge the delivery of results to our stakeholders. DHS has integrated a mission and mission support programmatic view into a significant portion of the Level 1 Program, Project, or Activities (PPAs) in the budget. A mission program is a group of activities acting together to accomplish a specific high-level outcome external to DHS, and includes operational processes, skills, technology, human capital, and other resources. Mission support programs are those that are cross-cutting in nature and support multiple mission programs. Performance measures associated with CWMD's mission support program are presented in two measure sets, strategic and management measures. Strategic measures communicate results delivered for our agency mission and are considered our Government Performance and Results Act Modernization Act (GPRAMA) measures. Additional supporting measures, known as management measures, are displayed to enhance connections to resource requests. The measure tables indicate new measures and those being retired, along with historical data if available.

Capability and Operational Support: The Capability and Operational Support program analyzes sensor data, defines requirements, provides test and evaluation capabilities, and procures chemical/biological and radiological/nuclear detection equipment that can be carried, worn, or easily moved to support operational end-users. The Program manages and supports national biosurveillance and detection capabilities, coordination, and preparedness for biological and chemical events to help communities build capabilities to prepare, respond, and recover.

Strategic Measures

Measure: Number of major metropolitan areas that have achieved Full Operational Capability to combat radiological/nuclear threats through the Securing the Cities Program							
Description: This measure assesses the number of major metropolitan areas that have achieved Full Operational Capability through the Securing the Cities (STC) program. The STC program seeks to give state and local agencies the ability to detect and deter nuclear terrorism. The program provides funding for equipment, such as radiation detectors, and training for up to five years. A major metropolitan area is deemed fully mission capable when 10 percent or more of its law enforcement is trained and equipped to conduct primary/secondary screening and alarm adjudication; has demonstrated a regionally coordinated radiological/nuclear detection; possesses operational and information exchange plans; and possesses protocols that facilitate mutual assistance and information sharing among regional partners and federal agencies.							
Fiscal Year:	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
Targets:	---	---	---	---	FOUO	FOUO	FOUO
Results:	---	---	---	---	FOUO	TBD	TBD

Measure: Percent of top 25 special events integrating biodetection monitoring							
Description: This measure is designed to identify how many Top 25 Special Events employ biological detection capability. To protect the Homeland from the threat of biological Weapons of Mass Destruction, the Department of Homeland Security Special Events Working Group determines annually the Top 25 special events that are integrating bio detection monitoring. This is done to increase National ability to counter attempts by terrorists and other threat actors to carry out an attack against the United States using a biological weapon of mass destruction.							
Fiscal Year:	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
Targets:	---	---	FOUO	FOUO	FOUO	N/A	N/A
Results:	---	---	FOUO	FOUO	FOUO	N/A	N/A

Management Measures

Measure: Number of biodefense exercises planned, sponsored, and conducted in accordance with the Homeland Security Exercise and Evaluation Program							
Description:							
Fiscal Year:	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
Targets:	---	---	---	---	---	FOUO	FOUO
Results:	---	---	---	---	---	TBD	TBD

Measure: Number of intelligence support products provided to DHS and federal, state, local, tribal and territorial customers							
Description:							
Fiscal Year:	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
Targets:	---	---	---	---	---	FOUO	FOUO
Results:	---	---	---	---	---	TBD	TBD

Measure: Percent of Acquisition programs to counter Chemical, Biological, Radiological, and Nuclear threats that meet all Key Performance Parameter requirements							
Description: This measure gauges progress in the delivering of an acquisition program's Key Performance Parameters (KPP). KPPs are key system capabilities that must be met for a system to meet its operational goals. The government will not accept new acquisitions if KPPs are not met. KPPs have both a threshold and an objective and to be accepted by the government, the prototype must perform between these two values.							
Fiscal Year:	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
Targets:	---	---	---	---	---	90.0%	95.0%
Results:	---	---	---	---	---	TBD	TBD

Measure: Percent of Acquisition programs to counter Chemical, Biological, Radiological, and Nuclear threats that meet their Acquisition Program Baseline schedule and cost thresholds						
Description: This measure gauges Chemical, Biological, Radiological, and Nuclear (CBRN) acquisitions meeting their cost and schedule plans. If cost or schedule exceeds each Acquisition's Program Baseline (APB) by more than ten percent, then the acquisition is considered to be in breach. If a program is in breach, there are a series of activities the program needs to complete to rectify and receive authority to proceed. This measure is a key indicator of the effectiveness of program management efforts for each acquisition.						
Fiscal Year:	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
Targets:	---	---	---	---	---	90%	95%
Results:	---	---	---	---	---	TBD	TBD

Measure: Percent of identified federal, state, local, tribal, and territorial stakeholders receiving the National Biosurveillance Integration Center reports						
Description:						
Fiscal Year:	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
Targets:	---	---	---	---	---	95%	95%
Results:	---	---	---	---	---	TBD	TBD

CWMD Research and Development: The Research and Development program manages efforts to identify, explore, develop, and demonstrate science and technologies that address gaps in the detection architecture. Activities also improve the performance of detection and analysis and forensics capabilities, and/or significantly reduce the operational burden of detection systems in the field. The program works closely with supported operational customers to ensure the effective transition of technologies to the field. This program includes Technology Advancement projects, as well as Small Business Innovation Research projects.

Management Measures

Measure: Percent of annual Research and Development program and project milestones successfully achieved						
Description: This measure will gauge how well Research and Development program and project activities and their progress milestones are executed by DNDO's Transformational and Applied Research Directorate against numerous types of projects that are planned for and budgeted each year. A steady or slightly increasing number of milestones met is an indicator of effective program management.						
Fiscal Year:	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
Targets:	---	---	90.0%	90.0%	95.0%	95.0%	95.0%
Results:	---	---	91.4%	57.0%	81.0%	TBD	TBD

Measure: Percent of BioWatch laboratories meeting expectation for scored proficiency tests to ensure they can identify known microorganisms of interest						
Description: This measure gauges whether BioWatch laboratories evaluating environmental samples for biological agents meet program quality assurance expectations to ensure they can identify known microorganisms of interest. These BioWatch laboratories are a network of public health laboratories. Periodic proficiency tests are performed at these laboratories to gauge proficiency on sample processing, analysis, and results reporting procedures, and these laboratories must meet expectations for operational preparedness. The BioWatch Program provides early warning of a bioterrorist attack in more than 30 major metropolitan areas across the country to help plan an effective, coordinated, and rapid response.						
Fiscal Year:	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
Targets:	---	---	---	---	96%	96%	96%
Results:	---	---	---	---	99%	TBD	TBD

Department of Homeland Security

Countering Weapons of Mass Destruction

Operations and Support

Fiscal Year 2023

Congressional Justification

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Operations and Support
Budget Comparison and Adjustments
Comparison of Budget Authority and Request
(Dollars in Thousands)

	FY 2021 Enacted			FY 2022 President's Budget			FY 2023 President's Budget			FY 2022 to FY 2023 Total Changes		
	Pos.	FTE	Amount	Pos.	FTE	Amount	Pos.	FTE	Amount	Pos.	FTE	Amount
Mission Support	287	267	$82,927	309	279	$85,316	269	252	$85,570	(40)	(27)	$254
Capability and Operational Support	-	-	$96,965	-	-	$71,884	-	-	$66,400	-	-	($5,484)
Total	**287**	**267**	**$179,892**	**309**	**279**	**$157,200**	**269**	**252**	**$151,970**	**(40)**	**(27)**	**($5,230)**
Subtotal Discretionary - Appropriation	287	267	$179,892	309	279	$157,200	269	252	$151,970	(40)	(27)	($5,230)

The Countering Weapons of Mass Destruction Office (CWMD) Operations and Support (O&S) appropriation funds activities to counter chemical, biological, radiological, nuclear (CBRN) threats**,** provide situational awareness, and support decision making for DHS leadership and Federal, State, local, tribal and territorial (FSLTT) partners. O&S also funds the day-to-day operation of the organization, including salaries, travel, and enterprise services.

The appropriation is broken out into the following Programs, Projects, and Activities (PPA):

Mission Support: The Mission Support PPA funds the Office of the Assistant Secretary and Enterprise Services. This PPA funds support compensation and benefits for CWMD employees; maintains enterprise leadership, management, and business administration for daily operations; and supports CWMD regional personnel. Key capabilities include workforce management, financial management, physical and personnel security, goods and services acquisition, information technology, compliance monitoring, property and assets management, communications, and general management and administration.

Capability & Operational Support (C&OS): The C&OS PPA funds programs and activities that provide situational awareness and decision support for DHS leadership and Federal partners, the National Biosurveillance Integration Center (NBIC), and the CWMD test and evaluation infrastructure. Additionally, it supports CWMD capabilities through the development of strategies, plans, and policy, capability and threat analysis, and the formulation of operational requirements. In FY 2023, funding for the Chief Medical Officer (CMO) will transfer to the Office of Health Security and Resilience (OHSR) within the DHS Office of the Secretary and Executive Management (OSEM). Also, O&S funding related to the Food, Agriculture, and Veterinary Defense program will be funded in the OHSR.

Operations and Support
Budget Authority and Obligations
(Dollars in Thousands)

	FY 2021	FY 2022	FY 2023
Enacted/Request	$179,892	$157,200	$151,970
Carryover - Start of Year	-	$3,850	$4,675
Recoveries	-	-	-
Rescissions to Current Year/Budget Year	($1,104)	-	-
Net Sequestered Resources	-	-	-
Reprogramming/Transfers	$1,104	-	-
Supplementals	-	-	-
Total Budget Authority	$179,892	$161,050	$156,645
Collections - Reimbursable Resources	$11,267	$271	$271
Collections - Other Sources	-	-	-
Total Budget Resources	$191,159	$161,321	$156,916
Obligations (Actual/Estimates/Projections)	$185,626	$156,646	$155,557
Personnel: Positions and FTE			
Enacted/Request Positions	287	309	269
Enacted/Request FTE	267	279	252
Onboard and Actual FTE			
Onboard (Actual/Estimates/Projections)	258	309	269
FTE (Actual/Estimates/Projections)	249	279	252

Operations and Support
Collections – Reimbursable Resources
(Dollars in Thousands)

	FY 2021 Enacted			FY 2022 President's Budget			FY 2023 President's Budget		
	Pos.	**FTE**	**Amount**	**Pos.**	**FTE**	**Amount**	**Pos.**	**FTE**	**Amount**
Department of Health and Human Services - Department Wide	-	-	$1,020	-	-	-	-	-	-
Department of Homeland Security - Federal Emergency Management Agency	-	-	$271	-	-	$271	-	-	$271
Department of Homeland Security - U.S. Customs and Border Protection	-	-	$9,500	-	-	-	-	-	-
Department of Homeland Security - U.S. Immigration and Customs Enforcement	-	-	$476	-	-	-	-	-	-
Total Collections	**-**	**-**	**$11,267**	**-**	**-**	**$271**	**-**	**-**	**$271**

Operations and Support
Summary of Budget Changes
(Dollars in Thousands)

	Positions	FTE	Amount
FY 2021 Enacted	**287**	**267**	**$179,892**
FY 2022 President's Budget	**309**	**279**	**$157,200**
FY 2023 Base Budget	**309**	**279**	**$157,200**
Total Technical Changes	**-**	**-**	**-**
Transfer for Annualization of MIX Personnel from CWMD/OS/MS to OSEM/OS/MO	-	(2)	($463)
Transfer for Office of Health Security & Resilience from CWMD/OS to OSEM/OS/MO	(44)	(35)	($21,261)
Total Transfers	**(44)**	**(37)**	**($21,724)**
Civilian Pay Raise Total	-	-	$2,087
Annualization of Prior Year Pay Raise	-	-	$378
FPS Fee Adjustment	-	-	$34
Pay Raise Annualization of FY 2022 Program Changes	-	-	$36
Annualization of Chem Bio Experts - AAAS Fellows	-	1	$146
Annualization of Federal Staff for Cyber Security	-	1	$134
Annualization of Federal Staff for Financial & Administrative Management	-	2	$268
Annualization of Medical Information Exchange Personnel	-	2	$463
Annualization of Risk Analysis & Capabilities Development Personnel	-	1	$255
Current Services Adjustments	-	-	$677
Total Pricing Changes	**-**	**7**	**$4,478**
Total Adjustments-to-Base	**(44)**	**(30)**	**($17,246)**
FY 2023 Current Services	**265**	**249**	**$139,954**
Cyber Security and Compliance	-	-	$3,386
Evidence Act Compliance	1	1	$1,114
Financial Systems and Personnel	3	2	$225
Information Architecture and Data Systems Maintenance	-	-	$2,712
Penetration Testing	-	-	$1,400

Strategic Planning & Assessments of Risk and Capability Gaps	-	-	$1,961
Test & Evaluation Infrastructure and Operations	-	-	$1,218
Total Program Changes	**4**	**3**	**$12,016**
FY 2023 Request	**269**	**252**	**$151,970**
FY 2022 TO FY 2023 Change	**(40)**	**(27)**	**($5,230)**

Operations and Support
Justification of Transfers
(Dollars in Thousands)

	FY 2023 President's Budget		
	Positions	**FTE**	**Amount**
Transfer 1 - Transfer for Annualization of MIX Personnel from CWMD/OS/MS to OSEM/OS/MO	**-**	**(2)**	**($463)**
Mission Support	-	(2)	($463)
Transfer 2 - Transfer for Office of Health Security & Resilience from CWMD/OS to OSEM/OS/MO	**(44)**	**(35)**	**($21,261)**
Mission Support	(44)	(35)	($9,209)
Capability and Operational Support	-	-	($12,052)
Total Transfer Changes	**(44)**	**(37)**	**($21,724)**

Transfer 1 – Transfer for Annualization of MIX Personnel: Transfers the annualized cost of the FY 2022 pay increase for Medical Information Exchange (MIX) personnel who will support the Office of Health Security & Resilience (OHSR) within OSEM.

Transfer 2 – Transfer for Office of Health Security & Resilience: Transfers all funding associated with the Chief Medical Officer personnel and programs to establish the OHSR.

Operations and Support
Justification of Pricing Changes
(Dollars in Thousands)

	FY 2023 President's Budget		
	Positions	FTE	Amount
Pricing Change 1 - Civilian Pay Raise Total	-	-	**$2,087**
Mission Support	-	-	$2,087
Pricing Change 2 - Annualization of Prior Year Pay Raise	-	-	**$378**
Mission Support	-	-	$378
Pricing Change 3 - FPS Fee Adjustment	-	-	**$34**
Mission Support	-	-	$34
Pricing Change 4 - Pay Raise Annualization of FY 2022 Program Changes	-	-	**$36**
Mission Support	-	-	$36
Pricing Change 5 - Annualization of Chem Bio Experts - AAAS Fellows	-	1	**$146**
Mission Support	-	1	$146
Pricing Change 6 - Annualization of Federal Staff for Cyber Security	-	1	**$134**
Mission Support	-	1	$134
Pricing Change 7 - Annualization of Federal Staff for Financial & Administrative Management	-	2	**$268**
Mission Support	-	2	$268
Pricing Change 8 - Annualization of Medical Information Exchange Personnel	-	2	**$463**
Mission Support	-	2	$463
Pricing Change 9 - Annualization of Risk Analysis & Capabilities Development Personnel	-	1	**$255**
Mission Support	-	1	$255
Pricing Change 10 - Current Services Adjustments	-	-	**$677**
Capability and Operational Support	-	-	$677
Total Pricing Changes	-	7	**$4,478**

Pricing Change 1 – Civilian Pay Raise Total: This Pricing Change reflects the increased pay costs due to the first three quarters of the 4.6 percent civilian pay increase for 2023. It reflects these costs for all pay funding included in the base, modified by any transfers of pay funding.

Pricing Change 2 – Annualization of Prior Year Pay Raise: This Pricing Change reflects the fourth quarter increased pay costs of the 2.7 percent civilian pay increase for 2022. It reflects these costs for all pay funding included in the base, modified by any transfers of pay funding.

Pricing Change 3 – FPS Fee Assessment: This Pricing Change reflects anticipated increases in Federal Protective Service (FPS) support.

Pricing Change 4 – Pay Raise Annualization of FY 2022 Program Changes: This Pricing Change reflects the increased pay costs of the 4.6 percent civilian pay increase for FY 2023 for all program changes proposed in the FY 2022 President's Budget.

Pricing Changes 5 through 9 – Annualization of Federal Staff Increases from FY 2022: These Pricing Changes reflect the full year pay for the positions added in FY 2022 to support Chemical/Biological Expertise, Cyber Security Staff, Financial & Administrative Staff, MIX Personnel, and Risk Analysis and Capabilities Development personnel.

Pricing Change 10 – Current Services Adjustment: This Pricing Change reflects cost increases to continue current services for IT systems operations, Watch Desk manning, operational travel, and continuing partnership agreements.

Operations and Support
Justification of Program Changes
(Dollars in Thousands)

	FY 2023 President's Budget		
	Positions	FTE	Amount
Program Change 1 - Cyber Security and Compliance	**-**	**-**	**$3,386**
Mission Support	-	-	$3,386
Program Change 2 - Evidence Act Compliance	**1**	**1**	**$1,114**
Mission Support	1	1	$1,114
Program Change 3 - Financial Systems and Personnel	**3**	**2**	**$225**
Mission Support	3	2	$225
Program Change 4 - Information Architecture and Data Systems Maintenance	**-**	**-**	**$2,712**
Capability and Operational Support	-	-	$2,712
Program Change 5 - Penetration Testing	**-**	**-**	**$1,400**
Mission Support	-	-	$1,400
Program Change 6 - Strategic Planning & Assessments of Risk and Capability Gaps	**-**	**-**	**$1,961**
Capability and Operational Support	-	-	$1,961
Program Change 7 - Test & Evaluation Infrastructure and Operations	**-**	**-**	**$1,218**
Capability and Operational Support	-	-	$1,218
Total Program Changes	**4**	**3**	**$12,016**

Program Change 1 – Cyber Security and Compliance:

Description
The FY 2023 Budget includes an increase of $3.4M to enhance governance and compliance activities. There is no base for this program.

Justification
This funding increase is necessary to implement governance and compliance measures to meet the requirements of Executive Order 13800 Strengthening the Cybersecurity of Federal Networks and Critical Infrastructure, Executive Order 13873 Securing the Information and Communications Technology, Services Supply Chain Executive Order 14028 Improving the Nation's Cybersecurity, and OMB Memorandum 19-03, Strengthening the Cybersecurity of Federal Agencies by enhancing the High Value Asset Program.

The funding increase will support CWMD compliance with DHS requirements for cybersecurity in the acquisition lifecycle per DHS Instruction 102-01-012. CWMD will engage subject matter experts to develop and implement policies, protocols, procedures, and standards for information technology governance, risk management, and compliance activities. CWMD plans to leverage the expertise in the Federally Funded Research and Development Centers (FFRDCs) as well as personnel in the National Laboratories to provide the expertise and technology access necessary to implement the activity.

Performance
The increase will ensure CWMD Cybersecurity risk management processes are aligned with strategic, operational, and budgetary planning processes. The additional funding will mitigate the risk and magnitude of the harm that would result from unauthorized access, use, disclosure, disruption, modification, or destruction of information technology and data.

Program Change 2 – Evidence Act Compliance:

Description
The FY 2023 Budget includes an increase of 1 Position, 1 FTE, and $1.1M to fund personnel to comply with Evidence Act data collection and reporting. There is no base for this program.

Justification
The increase in a Federal position with contract support staff reflects CWMD's new legal requirement to complete all tasks relating the Evidence-Based Policymaking Act of 2018. The Act positions a new system of evaluation and related infrastructure as foundation for coordinated, strategic, and transparent evidence planning, building, and use; expands access to and facilitates use of Federal data for evidence-building to inform public and private decision-making; and expands access to and use of Federal statistical agency data for evidence-building while providing strong protections for individuals' confidentiality.

In prior years Evidence Act Compliance was the task of the CFO, but this was at a time when the duties only included planning for the upcoming requirements. Now that additional requirements of the act have been established, CWMD currently has no staff with experience or workload bandwidth to meet these new requirements set forth. Not only will an additional person be critical to meet the requirements of the Evidence-Based Policymaking Act of 2018 but will also be critical in completing these requirements in a timely fashion.

The requirements of the personnel will include, but are not limited to, the following: building a learning agenda organized around priority questions; clarifying evidence building plans and answering questions; engaging stakeholders to promote utility, transparency, and accountability; and developing a multi-year prospectus with living documents that are revisited annually and adjusted as needed.

Performance
Increased funding for Federal staff and contractor support will allow CWMD to meet the requirements Evidence-Based Policymaking Act of 2018 and improve CWMDs overall capacity for evidence building, collection, and reporting.

Program Change 3 – Financial Systems and Personnel:

Description

The FY 2023 Budget includes an increase of 3 Positions, 2 FTE, and $0.2M to increase Federal staffing in the CWMD CFO Organization. The base for this program is the support personnel at 96 Positions, 87 FTE, and $17.0M.

Justification

The increase in Federal positions reflects CWMD's need to change the staffing mix in business processes which enable mission execution to address inherently governmental activities. Three positions will provide budget and finance functions.

Performance

Federal staff are necessary to make inherently governmental decisions and represent CWMD and DHS equities. The contractor to Federal conversion of these positions will have a positive effect on mission performance as it will increase efficiency and speed in decision making, granting approvals, and processing documentation.

Program Change 4 – Information Architecture and Data Systems Maintenance:

Description

The FY 2023 Budget includes an increase of $2.7M to expand data management and improve the system platform. The base for this program is $7.0M.

Justification

The increase in funding will support the expansion of data management and advanced analytical capabilities and improvements to the system platform that supports the CWMD Information Architecture. The Information Architecture is CWMD's capability for accessing data and information from partner sensors and systems, fusing the data, performing advanced analytics and anomaly detection on the data, assessing the data and results for relevance with respect to rules and criteria established by CWMD, and disseminating operationally relevant outputs to Federal, State, local, tribal, and territorial (FSLTT) law enforcement and investigatory partners.

The Information Architecture is intended to provide to CWMD and its partners a unified data sharing and analytics environment that can facilitate identification of CBRN and threats using machine learning and artificial intelligence. The overall effectiveness of the analytics results generated within the Information Architecture will grow with access to more relevant information. CWMD has embarked on an aggressive strategy to expand upon current data sharing and integration initiatives with operational components and other partners. However, in order for this information to be useful for advanced analytics, including artificial intelligence and machine learning, it needs to be gathered, processed, and managed within a centralized environment that provides sufficient computing capabilities for advanced analytics. This is an enormously labor-intensive task that will only grow with the volume of data received.

This increase in funding will enable CWMD to develop, evaluate, and propose solutions for aggregating legacy CBRN sensor data into a central analytics platform. This increase will also support additional 3 FTE contractor support staff, as well as the acquisition, development, and maintenance of automated tools to better manage the processing and structuring of this new data. Finally, the increase will support the operations and maintenance of the CWMD GATE-U Platform, which provides the data infrastructure to support the data analytics, data acquisition, code development, and data exploitation.

Performance
This capability will enable CWMD to aggregate CWMD-related information from DHS operational components and partners and generate operationally relevant outputs for each supported component. Further, by integrating relevant operational information with CWMD sensor data, CWMD can construct a more holistic assessment of the CBRN threat landscape than is available from any current source. With this increase in funding, CWMD will be able to translate the information and data obtained from operational partners into a format that enables transformational analytic approaches to identify novel CBRN threats and empower our operational partners to defeat these threats.

Program Change 5 – Penetration Testing:

Description
The FY 2023 Budget includes an increase of $1.4M to conduct security assessments of CWMD high value assets in accordance with OMB Memorandum M-19-03. There is no base for this program.

Justification
The funding increase will support CWMD compliance with DHS Enterprise High Value Assets (HVA) Governance, including prioritizing HVA and associated reporting, assessment, and remediation requirements and establishing the CWMD HVA program. DHS requirements are founded in OMB Memorandum 19-03, Strengthening the Cybersecurity of Federal Agencies by enhancing the High Value Asset Program.

The funding increase will resource CWMD planning and conduct of security assessments of CWMD HVA and operational technology systems to be deployed in under CWMD programs and projects, including Securing the Cities (STC) and Biological Detection for the 21st Century (BD-21) programs. CWMD HVA assessments will complement CWMD assessments conducted in compliance with Federal Information Security Modernization Act of 2014, 44 U.S. Code § 3554.

Performance
This funding is necessary to assure that CWMD HVA systems are capable of operating within defined levels of risk despite the environmental disruptions, human errors, structural failures, and purposeful attacks that are expected to occur across the environments in which those systems will operate. Verifiable trustworthiness in systems is anticipated to allow CWMD to primarily focus on information analysis and information sharing essential to CWMD missions and functions.

Program Change 6 – Strategic Planning & Assessments of Risk and Capability Gaps:

Description

The FY 2023 Budget includes an increase of $2.0M to strengthen CWMD's strategic planning and capability gaps. The base for this program is 15 Positions, 14 FTE, and $15.2M.

Justification

CWMD directs the development and coordination of DHS policy, strategy, and plans to counter CBRN threats affecting the United States. CWMD also conducts assessments to improve the capability to understand, anticipate, and mitigate the risk of CBRN threats. This funding increase is part of a planned implementation ramp for the risk and capability gap assessment project included in the FY 2022 Budget. In close coordination with DHS Science and Technology Directorate, additional funding will enable an informed, prepared homeland security posture with a formal, enterprise-wide capability gap and risk assessment function. This increase also adds four contractor programmatic support staff to aid in the development of strategies, plans, and policies related to CBRN and interagency coordination.

Performance

Increased funding will ensure sustainment of ongoing program activities and timely development and implementation of new leadership strategies, plans, policies and reports, while also maturing CWMD's capability gap and risk assessment function.

Program Change 7 – Test & Evaluation Infrastructure and Operations:

Description

The FY 2023 Budget includes an increase of $1.2M for Test and Evaluation (T&E) infrastructure and operations activities. The base for this program is 19 Positions, 18 FTE, and $12.3M.

Justification

The T&E program characterizes and/or verifies the technical performance of CBRN detection systems (both commercial off-the-shelf and systems under development), and validates the operational effectiveness, suitability, reliability, and cyber resiliency of CBRN detection systems prior to their procurement and deployment. The T&E program assesses the maturity of emerging technologies, plans and executes pilots, and conducts assessments in support of "rapid acquisitions". Additional funding will expand Chem/Bio testing capability and support the maintenance and sustainment of the CWMD T&E Infrastructure, Operational Analysis and Technical Assessment (OATA) activities, and additional contractor staff augmentation. T&E infrastructure consists of the databases, analysis tools, and equipment used to collect and store test data during and after test events. OATA activities involve the reuse of existing data used to conduct quick turn analysis. OATA also reuses exiting data to produce efficient Designs of Experiments which result in reduced test costs. The increase in funding will also allow T&E to augment its Federal staff with contractors that possess cyber and Chem/Bio testing expertise.

Performance

The additional funds will enable CWMD to expand T&E's Chem/Bio testing capability. T&E will be able to procure needed tools and equipment specific for Chem/Bio testing and fund the modification of existing databases by adding features and lexicon specific to Chem/Bio.

Operations and Support
Personnel Compensation and Benefits
Pay Summary
(Dollars in Thousands)

	FY 2021 Enacted				FY 2022 President's Budget				FY 2023 President's Budget				FY 2022 to FY 2023 Total			
	Pos.	FTE	Amount	Rate	Pos.	FTE	Amount	Rate	Pos.	FTE	Amount	Rate	Pos.	FTE	Amount	Rate
Mission Support	287	267	$55,502	$191.13	309	279	$60,122	$196.66	269	252	$55,602	$200.38	(40)	(27)	($4,520)	$3.72
Capability and Operational Support	-	-	$2,583	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**287**	**267**	**$58,085**	**$191.13**	**309**	**279**	**$60,122**	**$196.66**	**269**	**252**	**$55,602**	**$200.38**	**(40)**	**(27)**	**($4,520)**	**$3.72**
Subtotal Discretionary - Appropriation	287	267	$58,085	$191.13	309	279	$60,122	$196.66	269	252	$55,602	$200.38	(40)	(27)	($4,520)	$3.72

Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
11.1 Full-time Permanent	$37,361	$39,326	$36,722	($2,604)
11.3 Other than Full-time Permanent	-	$710	$197	($513)
11.5 Other Personnel Compensation	$462	$505	$560	$55
11.8 Special Personal Services Payments	$7,052	$5,255	$5,107	($148)
12.1 Civilian Personnel Benefits	$13,210	$14,326	$13,016	($1,310)
Total - Personnel Compensation and Benefits	**$58,085**	**$60,122**	**$55,602**	**($4,520)**
Positions and FTE				
Positions - Civilian	287	309	269	(40)
FTE - Civilian	267	279	252	(27)

Operations and Support
Permanent Positions by Grade – Appropriation
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Total, SES	24	24	21	(3)
GS-15	79	80	68	(12)
GS-14	90	96	85	(11)
GS-13	41	42	38	(4)
GS-12	28	36	37	1
GS-11	12	12	13	1
GS-10	5	5	5	-
GS-9	3	3	2	(1)
Other Grade Positions	5	11	-	(11)
Total Permanent Positions	**287**	**309**	**269**	**(40)**
Total Perm. Employment (Filled Positions) EOY	258	309	269	(40)
Unfilled Positions EOY	29	-	-	-
Position Locations				
Headquarters Civilian	258	274	243	(31)
U.S. Field Civilian	29	35	26	(9)
Averages				
Average Personnel Costs, ES Positions	$192,945	$198,155	$205,779	$7,624
Average Personnel Costs, GS Positions	$142,915	$146,774	$151,655	$4,881
Average Grade, GS Positions	14	14	14	-

Operations and Support
Non Pay Budget Exhibits
Non Pay Summary
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Mission Support	$27,425	$25,194	$29,968	$4,774
Capability and Operational Support	$94,382	$71,884	$66,400	($5,484)
Total	**$121,807**	**$97,078**	**$96,368**	**($710)**
Subtotal Discretionary - Appropriation	$121,807	$97,078	$96,368	($710)

Non Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
21.0 Travel and Transportation of Persons	$1,347	$1,334	$1,279	($55)
23.2 Rental Payments to Others	$518	$518	$393	($125)
23.3 Communications, Utilities, & Miscellaneous	-	-	$15	$15
24.0 Printing and Reproduction	$55	$55	$48	($7)
25.1 Advisory & Assistance Services	$43,048	$42,777	$40,706	($2,071)
25.2 Other Services from Non-Federal Sources	$17,387	$7,342	$7,126	($216)
25.3 Other Purchases of goods and services	$30,959	$21,973	$23,622	$1,649
25.4 Operations & Maintenance of Facilities	-	-	$1	$1
25.5 Research & Development Contracts	-	$1,000	$1,000	-
25.7 Operation & Maintenance of Equipment	$7,772	$7,851	$7,302	($549)
26.0 Supplies & Materials	$15,674	$9,523	$9,425	($98)
31.0 Equipment	$3,685	$2,843	$4,045	$1,202
41.0 Grants, Subsidies, and Contributions	$1,350	$1,850	$1,394	($456)
94.0 Financial Transfers	$12	$12	$12	-
Total - Non Pay Budget Object Class	**$121,807**	**$97,078**	**$96,368**	**($710)**

Mission Support – PPA
Budget Comparison and Adjustments
Comparison of Budget Authority and Request
(Dollars in Thousands)

	FY 2021 Enacted			FY 2022 President's Budget			FY 2023 President's Budget			FY 2022 to FY 2023 Total Changes		
	Pos.	FTE	Amount	Pos.	FTE	Amount	Pos.	FTE	Amount	Pos.	FTE	Amount
Mission Support	287	267	$82,927	309	279	$85,316	269	252	$85,570	(40)	(27)	$254
Total	**287**	**267**	**$82,927**	**309**	**279**	**$85,316**	**269**	**252**	**$85,570**	**(40)**	**(27)**	**$254**
Subtotal Discretionary - Appropriation	287	267	$82,927	309	279	$85,316	269	252	$85,570	(40)	(27)	$254

PPA Level I Description

Mission Support funds personnel compensation and benefits for all CWMD employees and provides enterprise leadership, management, and business administration in support of daily operations. Key capabilities include workforce management, financial management, physical and personnel security, goods and services acquisition, information technology, compliance activities, property and assets management, communications, and general management and administration.

Programs funded by the Mission Support PPA include the following:

Office of the Assistant Secretary and Enterprise Services: The Office of the Assistant Secretary and Enterprise Services provides overall management of CWMD and develops long-range management plans for the efficient and effective operation of the organization. The office develops and reviews CWMD strategic direction and policy and issues internal guidance to employees that is consistent with regulations and the authority delegated by DHS. The office comprises the Chief of Staff, Executive Secretary and Legislative Affairs, Communications staff, and Enterprise Services. Business requirements include financial management systems and operations, workforce management, information technology, compliance and evidence monitoring, facility management, and personnel security services.

Salaries, Benefits and Detailees: Provides compensation for all CWMD Federal personnel and reimbursement to other agencies for detailees, for personnel from Federal partners, and the Office of General Council (OGC).

Mission Support – PPA
Budget Authority and Obligations
(Dollars in Thousands)

	FY 2021	FY 2022	FY 2023
Enacted/Request	**$82,927**	**$85,316**	**$85,570**
Carryover - Start of Year	-	-	-
Recoveries	-	-	-
Rescissions to Current Year/Budget Year	($1,104)	-	-
Net Sequestered Resources	-	-	-
Reprogramming/Transfers	($1,334)	-	-
Supplementals	-	-	-
Total Budget Authority	**$80,489**	**$85,316**	**$85,570**
Collections - Reimbursable Resources	$271	$271	$271
Collections - Other Sources	-	-	-
Total Budget Resources	**$80,760**	**$85,587**	**$85,841**
Obligations (Actual/Estimates/Projections)	$80,385	$85,587	$85,841
Personnel: Positions and FTE			
Enacted/Request Positions	287	309	269
Enacted/Request FTE	267	279	252
Onboard and Actual FTE			
Onboard (Actual/Estimates/Projections)	258	309	269
FTE (Actual/Estimates/Projections)	249	279	252

Mission Support – PPA
Collections – Reimbursable Resources
(Dollars in Thousands)

	FY 2021 Enacted			FY 2022 President's Budget			FY 2023 President's Budget		
	Pos.	FTE	Amount	Pos.	FTE	Amount	Pos.	FTE	Amount
Department of Homeland Security - Federal Emergency Management Agency	-	-	$271	-	-	$271	-	-	$271
Total Collections	**-**	**-**	**$271**	**-**	**-**	**$271**	**-**	**-**	**$271**

Mission Support – PPA
Summary of Budget Changes
(Dollars in Thousands)

	Positions	FTE	Amount
FY 2021 Enacted	**287**	**267**	**$82,927**
FY 2022 President's Budget	**309**	**279**	**$85,316**
FY 2023 Base Budget	**309**	**279**	**$85,316**
Total Technical Changes	**-**	**-**	**-**
Transfer for Annualization of MIX Personnel from CWMD/OS/MS to OSEM/OS/MO	-	(2)	($463)
Transfer for Office of Health Security & Resilience from CWMD/OS to OSEM/OS/MO	(44)	(35)	($9,209)
Total Transfers	**(44)**	**(37)**	**($9,672)**
Civilian Pay Raise Total	-	-	$2,087
Annualization of Prior Year Pay Raise	-	-	$378
FPS Fee Adjustment	-	-	$34
Pay Raise Annualization of FY 2022 Program Changes	-	-	$36
Annualization of Chem Bio Experts - AAAS Fellows	-	1	$146
Annualization of Federal Staff for Cyber Security	-	1	$134
Annualization of Federal Staff for Financial & Administrative Management	-	2	$268
Annualization of Medical Information Exchange Personnel	-	2	$463
Annualization of Risk Analysis & Capabilities Development Personnel	-	1	$255
Total Pricing Changes	**-**	**7**	**$3,801**
Total Adjustments-to-Base	**(44)**	**(30)**	**($5,871)**
FY 2023 Current Services	**265**	**249**	**$79,445**
Cyber Security and Compliance	-	-	$3,386
Evidence Act Compliance	1	1	$1,114
Financial Systems and Personnel	3	2	$225
Penetration Testing	-	-	$1,400
Total Program Changes	**4**	**3**	**$6,125**
FY 2023 Request	**269**	**252**	**$85,570**

FY 2022 TO FY 2023 Change	(40)	(27)	$254

Mission Support – PPA
Personnel Compensation and Benefits
Pay Summary
(Dollars in Thousands)

	FY 2021 Enacted				FY 2022 President's Budget				FY 2023 President's Budget				FY 2022 to FY 2023 Total			
	Pos.	FTE	Amount	Rate	Pos.	FTE	Amount	Rate	Pos.	FTE	Amount	Rate	Pos.	FTE	Amount	Rate
Mission Support	287	267	$55,502	$191.13	309	279	$60,122	$196.66	269	252	$55,602	$200.38	(40)	(27)	($4,520)	$3.72
Total	**287**	**267**	**$55,502**	**$191.13**	**309**	**279**	**$60,122**	**$196.66**	**269**	**252**	**$55,602**	**$200.38**	**(40)**	**(27)**	**($4,520)**	**$3.72**
Subtotal Discretionary - Appropriation	287	267	$55,502	$191.13	309	279	$60,122	$196.66	269	252	$55,602	$200.38	(40)	(27)	($4,520)	$3.72

The FTE Rate calculation does not include Object Class 11.8-Special Personal Services Payments or 13.0-Benefits for Former Personnel

Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
11.1 Full-time Permanent	$37,361	$39,326	$36,722	($2,604)
11.3 Other than Full-time Permanent	-	$710	$197	($513)
11.5 Other Personnel Compensation	$462	$505	$560	$55
11.8 Special Personal Services Payments	$4,469	$5,255	$5,107	($148)
12.1 Civilian Personnel Benefits	$13,210	$14,326	$13,016	($1,310)
Total - Personnel Compensation and Benefits	**$55,502**	**$60,122**	**$55,602**	**($4,520)**
Positions and FTE				
Positions - Civilian	287	309	269	(40)
FTE - Civilian	267	279	252	(27)

Pay Cost Drivers

	FTE	FY 2021 Enacted Amount	Rate	FTE	FY 2022 President's Budget Amount	Rate	FTE	FY 2023 President's Budget Amount	Rate	FTE	FY 2022 to FY 2023 Total Changes Amount	Rate
Mission Personnel Compensation and Benefits	183	$34,978	$191.14	192	$37,758	$196.66	159	$31,887	$200.55	(33)	($5,871)	$3.89
Mission Support Personnel Compensation and Benefits	84	$16,055	$191.13	87	$17,109	$196.66	93	$18,608	$200.09	6	$1,499	$3.43
Other PC&B Costs	-	$4,469	-	-	$5,255	-	-	$5,107	-	-	($148)	-
Total - Pay Cost Drivers	**267**	**$55,502**	**$191.13**	**279**	**$60,122**	**$196.66**	**252**	**$55,602**	**$200.38**	**(27)**	**($4,520)**	**$3.72**

Explanation of Pay Cost Drivers

Mission Personnel Compensation and Benefits: This cost driver supports personnel compensation, benefits and performance awards for Federal employees who are direct mission-focused personnel. In FY 2023, this cost driver includes a decrease of 44 positions and 37 FTE which accompany the transfer of the Office of Health Security and Resilience (OHSR) within OSEM. This cost driver also includes annualization of four FTE, two of which are included in the transfer to OHSR.

Mission Support Personnel Compensation and Benefits: This cost driver supports personnel compensation, benefits and performance awards for Federal employees indirectly facilitating the operations and mission of CWMD. They include Front Office personnel and those in Enterprise Services such as business, administrative, communications, facilities management, security, and finance personnel. In FY 2023, the cost driver includes four additional positions with three FTE. It also includes annualization of three FTE for the positions included in the FY 2022 Budget for cyber security and administrative support.

Other PC&B Costs: This cost driver provides funding for personnel detailed from DHS Operational Components, Office of General Council, HHS PHSOs and other interagency partners. The FY 2023 change reflects a transfer of a Public Health Service Officer (PHSO) to OSEM with the Chief Medical Officer to the OHSR.

Mission Support – PPA
Non Pay Budget Exhibits
Non Pay Summary
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Mission Support	$27,425	$25,194	$29,968	$4,774
Total	**$27,425**	**$25,194**	**$29,968**	**$4,774**
Subtotal Discretionary - Appropriation	$27,425	$25,194	$29,968	$4,774

Non Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
21.0 Travel and Transportation of Persons	$206	$206	$217	$11
23.2 Rental Payments to Others	$518	$518	$393	($125)
23.3 Communications, Utilities, & Miscellaneous	-	-	$15	$15
24.0 Printing and Reproduction	$27	$27	$26	($1)
25.1 Advisory & Assistance Services	$14,956	$14,406	$18,054	$3,648
25.2 Other Services from Non-Federal Sources	$445	$552	$743	$191
25.3 Other Purchases of goods and services	$6,380	$4,335	$4,527	$192
25.4 Operations & Maintenance of Facilities	-	-	$1	$1
25.7 Operation & Maintenance of Equipment	$4,372	$4,446	$4,784	$338
26.0 Supplies & Materials	$274	$299	$351	$52
31.0 Equipment	$235	$393	$845	$452
94.0 Financial Transfers	$12	$12	$12	-
Total - Non Pay Budget Object Class	**$27,425**	**$25,194**	**$29,968**	**$4,774**

Non Pay Cost Drivers

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Total Changes
Operations Support	$7,456	$8,033	$9,053	$1,020
Information Technology Support	$3,380	$3,712	$7,098	$3,386
Financial Systems	$6,345	$4,254	$4,504	$250
Financial Systems Support	$3,685	$4,095	$4,140	$45
Other Costs	$6,559	$5,100	$5,173	$73
Total - Non-Pay Cost Drivers	**$27,425**	**$25,194**	**$29,968**	**$4,774**

Explanation of Non Pay Cost Drivers

Operations Support: This includes costs for the financial management contract support staff; Evidence Act staff; executive assistants and security contract staff; and facilities support personnel. The increase reflects additional resources to support the Evidence Act Requirements.

Information Technology Support: Includes costs for Information Technology and Cyber Security support, compliance activities, credit monitoring, printer maintenance, secure telephone lines, HSDN data network circuits, Enterprise license agreements, and SharePoint site operations and maintenance costs. The increase reflects the program change for Cyber Security and Compliance.

Financial Systems: This cost driver supports the financial systems for CWMD as well as legacy OHA and DNDO prior year obligations. It includes the cost for Immigration and Customs Enforcement (ICE) Federal Financial Management System (FFMS) and the DHS Financial Systems Modernization Solution (FSMS).

Financial Systems Support: This includes the costs for U.S. Coast Guard Finance Center, FFMS provider (ICE) service-level agreement, FSMS licenses (Oracle licenses), financial management support, and FSMS integration costs to the DHS travel management system.

Other Costs: This cost driver includes for supplies, materials, enterprise service support, transit expenses, printing and reproduction, travel, training of personnel, information subscription services, facility support, and reception. This cost driver also includes costs to support CWMD personnel at remote and regional locations across the Nation.

Capability and Operations Support – PPA
Budget Comparison and Adjustments
Comparison of Budget Authority and Request
(Dollars in Thousands)

	FY 2021 Enacted			FY 2022 President's Budget			FY 2023 President's Budget			FY 2022 to FY 2023 Total Changes		
	Pos.	FTE	Amount	Pos.	FTE	Amount	Pos.	FTE	Amount	Pos.	FTE	Amount
Capability and Operational Support	-	-	$96,965	-	-	$71,884	-	-	$66,400	-	-	($5,484)
Total	**-**	**-**	**$96,965**	**-**	**-**	**$71,884**	**-**	**-**	**$66,400**	**-**	**-**	**($5,484)**
Subtotal Discretionary - Appropriation	-	-	$96,965	-	-	$71,884	-	-	$66,400	-	-	($5,484)

PPA Level I Description

The C&OS PPA funds programs and activities that provide situational awareness and decision support for DHS leadership and Federal partners. The C&OS PPA supports CWMD capabilities through the development of strategies, plans, and policy, capability gap and threat/risk analysis, and the formulation of operational requirements. The C&OS PPA also funds the National Biosurviellance Integration Center (NBIC), CWMD test and evaluation infrastructure, and CWMD operations which provide an effective means of surveillance, collaboration and response to emerging WMD threats along our borders. In FY 2023, the activities that fell under the CMO, including the CWMD food, agriculture and veterinary defense program, DHS emergency medical services coordination program, and the electronic patient records system will be transferred to the Office of Health Security and Resilience (OHSR). These activities will reside in the DHS Office of the Secretary and Executive Management (OSEM).

This PPA includes the following programs:

Strategic Planning and Threat Analysis: Costs associated with Strategic Planning include the development and coordination of DHS policy, strategy, and plans to counter CBRN and security threats affecting the United States. CWMD also conducts assessments to improve the capability to understand, anticipate, and mitigate the risk of CBRN. Funding within this program provides administrative and programmatic services across many disciplines, including: 1) development of DHS and CWMD strategies, plans, and policy related to CBRN security issues; 2) coordination across CWMD, DHS, and the interagency addressing the CBRN mission space; 3) policy review of all DHS external communications on CBRN; 4) support for White House engagement by CWMD and DHS senior leaders; 5) development, coordination, and publication of reports required by Congress and DHS; 6) support to and engagement with FSLTT partners to implement and align strategies, plans, and policies that enable an informed, prepared homeland security posture; and 7) strengthen the CWMD requirements function by adding a formal, enterprise-wide capability and risk assessment function. This increase to base funding levels sustains ongoing program activities while also addressing necessary growth related to the development of strategies, plans, policy, reports, and capability gap and risk assessments. Additionally, CWMD provides mission-area information to support the

DHS Office of Intelligence and Analysis' process to provide senior leaders with the most current and accurate WMD threat information available. CWMD coordinates with the Science & Technology Directorate and interagency partners on research and development requirements as necessary.

- *Strategic Planning* provides necessary support to develop and coordinate strategies, plans, policy, and reports on behalf of DHS on CBRN and related matters. This project supports CWMD policy coordination for DHS and strategy development and implementation planning for DHS and CWMD. This effort includes support for coordination of Department-wide implementation activities, such as for the National Biodefense Strategy, development of Department-wide and multi-Component steady state and contingency plans, including the DHS Chemical Defense Strategy Implementation Plan and Inbound Nuclear Threat Planning Framework; and White House engagement and coordination.

- *Capabilities and Risk Assessments* leads development and implementation of a robust, enterprise-wide CBRN risk assessment and gap identification capability to prioritize investments that directly address CBRN risks and capability gaps. The program will conduct capabilities-based assessments to identify capability gaps and prioritize processes and resources that may prevent exploitable vulnerabilities, ultimately improving the capability to understand, anticipate, and mitigate the risk of CBRN security threats.

- *Countering Emerging & Enduring Biological and Chemical Threats* leverages CWMD's responsibility to coordinate Federal Government actions and help ensure the U.S. Government is countering enduring and emerging biological and chemical threats in a cohesive, comprehensive, and effective manner. CWMD will utilize integrative yet focused support, engagement and studies to implement strategies, plans, and policies that enable an informed, prepared homeland security posture.

- *International Partner Engagement Support Project* facilitates CWMD engagement with international partners to identify threats and disrupt adversary acquisition planning, transport, and use of WMD before they reach U.S. borders. CWMD will actively engage with DHS Components, Federal interagency partners, and when appropriate, directly with international partners and organizations to accomplish its mission to prevent the use of WMD against the homeland and promote readiness for CBRN and other security threats.

- *CWMD Threat Analysis Activities* develops a robust and technologically advanced analytic capability to counter chemical, biological, radiological, and nuclear threats to the homeland and U.S. interests. This effort will provide operationally focused WMD intelligence, operational integration with departmental field operations, and Department of Defense (DoD)/Intelligence Community (IC)/Information Analysis (IA)/Foreign Partner collaboration.

Information Architecture and Data System Maintenance: The CWMD Information Architecture provides a framework to gather, integrate, analyze, and disseminate information/data to better anticipate, prevent, and respond to WMD threats. The Information Architecture is a system-of-systems architecture to interconnect information systems and data sources, both inside and outside of CWMD. The Information Architecture also provides a unified data sharing and analytics environment to facilitate identification of CBRN threats using advanced analytic techniques, including data science, machine learning, and artificial intelligence.

- *Data Integration* is responsible for facilitating the effective sharing and use of information to maintain continuous awareness of CBRN threats. Data Integration fuses data from the intelligence community, law enforcement agencies, the counterterrorism community, and other government agencies, develops advanced analytic capabilities, and provides capabilities to disseminate threat information to operational partners in operationally relevant time frames. Data Integration also defines requirements for Information Technology (IT) systems needed to support this function.

  Additional funding for Data Integration this year will support two new initiatives. First, Transmission and Network funding will facilitate the collection and integration of legacy CBRN sensor data into a centralized analytics platform. Second, funding to support Common Annotation Standards, participation in a Data Annotation Contract, and generation of Synthetic Data will provide tools and capabilities that allow CWMD to more rapidly ingest, process, and analyze new data and information sources for evidence or indicators of CBRN threats.

- *Information Architecture Platform Operations and Maintenance* supports the operations and maintenance of the CWMD Information Architecture (GATE-U) Platform and supports the data infrastructure for the data analytics, data acquisition, code development, and data exploitation. CWMD Information Architecture (GATE-U) Maintenance and Support activities include contracted software engineering labor to properly maintain and support the system, contract technical capabilities, third-party cybersecurity software required to properly secure and operate the system, and contracted cybersecurity labor to support authorization activities and security integrity monitoring of the system.

National Biosurveillance Integration Center (NBIC): NBIC enhances the capability of the FSLTT governments to rapidly identify, characterize, localize, and track biological events of National concern. NBIC disseminates biosurveillance tools, analysis, and information to support common situational awareness and operational responses. NBIC is expanding its reach into partner biosurveillance organization and systems and greatly enhance its analytic capabilities to handle the increasing complex information needs of leaders within the Department as well as in our FSLTT partners. NBIC also supports the development and deployment of IT systems to support NBIC's mission, and to provide a framework for collaboration with its interagency National Biosurveillance Integration System (NBIS) partners. These systems include the Biosurveillance Ecosystem (BSVE), a cloud-based platform that facilitates information sharing and analysis capabilities for NBIC's partners, and the Biofeeds system, which enables the efficient review of large volumes of open source data, rapid curation and analysis, and the generation of NBIC products and reports.

Test & Evaluation (T&E): The T&E program provides funds to characterize, verify, and validate technical performance, and assess the operational effectiveness and suitability of chemical, biological, and radiological/nuclear detection technologies under development, commercially available systems, and emerging technologies and systems prior to deployment (full operational capability). CWMD's suite of test instrumentation and automated data collection systems enable testing teams to rapidly verify and validate data. The Standards project follows a development, use, and revision cycle to ensure that consensus and technical capability standards remain effective for detection technology.

Test & Evaluation supports CWMD programs by conducting tests and evaluations to determine technological maturity, effectiveness, suitability, and compliance with cybersecurity requirements.

- *T&E Operations* implement innovative methods scalability testing based on the maturity, complexity, and cost of the technology being tested. This includes actions to identify and implement T&E best practices for supporting Rapid Acquisition Programs; incorporate best T&E practices into the T&E Operational Instruction; deliver T&E solutions for both rapid and conventional acquisitions; evaluate technical maturity of materiel solutions in support of their transfer from R&D to Acquisition; and development T&E, operational T&E, and regression testing for deployed capabilities.

- *T&E Operational Analysis and Technical Assessments* supports the Data Mining, Analysis, and Modeling Cell (DMAMC). The DNAMC is a unique resource that optimizes the use of CWMD's existing knowledge base to improve efficiency of test planning and execution, address questions of detector performance through the reuse and evaluation of existing data and shift the reliance on testing only when needed to acquire new knowledge. The project has consolidated and built several databases and libraries that feature common, controlled access and easy reuse of CWMD data, and DMAMC personnel are vital resources for using these databases. Projects funded directly by DMAMC cut across programs and past tests to ensure CWMD maintains a comprehensive view of its detector knowledge base. DMAMC allows CWMD to respond to requests for information from stakeholders that require such cross-cutting analyses.

- *T&E Infrastructure* supports the maintenance and sustainment of testing infrastructure to promote efficiencies, cost savings, consistency and robustness across all types of test and evaluation events. This infrastructure includes but is not limited to the design/fabrication of Special Nuclear Material sources, chem/biomaterials, fissile material handling, data collection systems, specialized testing equipment, models, and data repositories to allow for the reuse of data.

- *The Standards & Conformity* effort supports performance standards for radiological and nuclear detection systems. The program provides funding for the development and maintenance of American National Standards Institute standards, Technical Capability Standards, and International Electrotechnical Commission standards, as well as associated conformity testing against the criteria in those standards. The standards serve as the premier benchmark criteria for detection system capability requirements for radiological/nuclear detection. Technical Capability Standards are directed by the *Security and Accountability for Every Port Act* (or SAFE Port Act) of 2006. Voluntary consensus standards establish baseline performance requirements, provide a means to verify those requirements are met, and help promote development and revision of detection equipment for operational government users, law enforcement, and other State and local users.

Coordination & Requirements: The Coordination and Requirements program provides funds for requirements, current operations, chemical support coordination, and field operations.

- *Requirements* serves as the central integrator of CWMD capability gap identification across the Department and works with DHS components to identify, validate, prioritize and catalog capability gaps, and to support the development of requirements documents as required by the Department's Joint Requirements Council. Requirements Project personnel oversee the development and management of a standardized process to generate and maintain capability (operational) requirements for DHS frontline operators and first responders in support of follow-on acquisition activities. This project ensures validated CWMD capability gaps are prioritized by a cross-component evaluation team using a CWMD Requirements Oversight Council (WROC) approved evaluation process. The prioritized list is then used to inform the CWMD Planning,

Programming, Budgeting, and Execution process and CWMD Directorate activities and initiatives. This project also serves as the executive secretariat of the WROC which functions as CWMD's oversight and coordination body for CWMD requirements and capability gap validation. It is comprised of Senior Executives from nine DHS components that serve as voting Principals.

- *Current Operations* provides near real-time situational awareness and analysis daily to CWMD Leadership on emerging threats or incidents as it relates to WMD or CBRN, medical, and terrorism events. Current Operations will continue to leverage existing, off-the-shelf technologies to provide near-real time reporting and situational awareness to both CWMD leadership and those personnel / assets deployed in support of CBRN detection missions. This includes comprehensive daily, steady-state reporting, and situational crisis reporting. Specifically, Current Operations is responsible for:
  - Coordinating the DHS informational updates for Federal Bureau of Investigation Weapons of Mass Destruction Strategic Group deployment.
  - Through assigned Federal staff, maintaining CWMD's liaison with the DHS Office of Homeland Security Situational Awareness, which coordinates planning for future operations and threat responses (i.e., countering unmanned aerial systems, and inbound nuclear threat planning).
  - Maintaining the family of plans and responses to continuity of operations, continuity of government, and CWMD's devolution of authority.
  - Implementing Incident Coordination for CWMD efforts and provide the Assistant Secretary the most accurate and actionable information to aid in emergency decision making.
  - Maintaining a contingency planning capability allowing support and course of action development for CWMD senior leadership in response to CBRN security threats and incidents.
  - Managing the CWMD Watch Desk at the DHS National Operations Center, which develops and provides 24/7/365 situational awareness and related incident information with DHS and Federal agencies. This is executed by providing end-to-end scalable operations coordination, which is required to support CWMD and the Department's information sharing and coordination requirements, across the chemical, biological, radiological, nuclear, and medical domains.

- *Chemical Support* leads DHS-wide chemical defense coordination through Chemical Coordination Group (CCG), a coordination body comprising DHS operational and headquarters Components with significant chemical defense equities to align, enhance and integrate DHS chemical defense capabilities. The CCG serves as the principal DHS coordination body for both strategic and emergent operational issues related to chemical defense. In conjunction with CWMD, the CCG developed and maintains the DHS Chemical Defense Strategy, which was signed by the Acting Secretary in December 2019. To implement the strategy and enhance DHS-wide unity of effort, the CCG is 1) holding monthly group meetings; 2) identifying implementation priorities to take to action; 3) holding threat-based workshops to provide state of the science education and identify current capabilities and potential gaps; and 4) developing inventories and in-depth analyses to identify key areas of improvement and unity of effort across DHS components.

- *Field Operations* supports CWMD forward deployed personnel across the Nation, focusing on high-risk metropolitan areas included in CWMD's regional approach to support operations. These personnel interface with CWMD stakeholders allowing CWMD to provide direct and focused support CBRN expertise in support of CWMD programs within the area of operation.

Capability and Operations Support – PPA
Budget Authority and Obligations
(Dollars in Thousands)

	FY 2021	FY 2022	FY 2023
Enacted/Request	**$96,965**	**$71,884**	**$66,400**
Carryover - Start of Year	-	$3,850	$4,675
Recoveries	-	-	-
Rescissions to Current Year/Budget Year	-	-	-
Net Sequestered Resources	-	-	-
Reprogramming/Transfers	$2,438	-	-
Supplementals	-	-	-
Total Budget Authority	**$99,403**	**$75,734**	**$71,075**
Collections - Reimbursable Resources	$10,996	-	-
Collections - Other Sources	-	-	-
Total Budget Resources	**$110,399**	**$75,734**	**$71,075**
Obligations (Actual/Estimates/Projections)	$105,241	$71,059	$69,716
Personnel: Positions and FTE			
Enacted/Request Positions	-	-	-
Enacted/Request FTE	-	-	-
Onboard and Actual FTE			
Onboard (Actual/Estimates/Projections)	-	-	-
FTE (Actual/Estimates/Projections)	-	-	-

Capability and Operations Support – PPA
Collections – Reimbursable Resources

(Dollars in Thousands)

	FY 2021 Enacted			FY 2022 President's Budget			FY 2023 President's Budget		
	Pos.	**FTE**	**Amount**	**Pos.**	**FTE**	**Amount**	**Pos.**	**FTE**	**Amount**
Department of Health and Human Services - Department Wide	-	-	$1,020	-	-	-	-	-	-
Department of Homeland Security - U.S. Customs and Border Protection	-	-	$9,500	-	-	-	-	-	-
Department of Homeland Security - U.S. Immigration and Customs Enforcement	-	-	$476	-	-	-	-	-	-
Total Collections	**-**	**-**	**$10,996**	**-**	**-**	**-**	**-**	**-**	**-**

Capability and Operations Support – PPA
Summary of Budget Changes
(Dollars in Thousands)

	Positions	FTE	Amount
FY 2021 Enacted	-	-	**$96,965**
FY 2022 President's Budget	-	-	**$71,884**
FY 2023 Base Budget	-	-	**$71,884**
Total Technical Changes	-	-	-
Transfer for Office of Health Security & Resilience from CWMD/OS to OSEM/OS/MO	-	-	($12,052)
Total Transfers	-	-	**($12,052)**
Current Services Adjustments	-	-	$677
Total Pricing Changes	-	-	**$677**
Total Adjustments-to-Base	-	-	**($11,375)**
FY 2023 Current Services	-	-	**$60,509**
Information Architecture and Data Systems Maintenance	-	-	$2,712
Strategic Planning & Assessments of Risk and Capability Gaps	-	-	$1,961
Test & Evaluation Infrastructure and Operations	-	-	$1,218
Total Program Changes	-	-	**$5,891**
FY 2023 Request	-	-	**$66,400**
FY 2022 TO FY 2023 Change	-	-	**($5,484)**

Capability and Operations Support – PPA
Personnel Compensation and Benefits
Pay Summary
(Dollars in Thousands)

	FY 2021 Enacted				FY 2022 President's Budget				FY 2023 President's Budget				FY 2022 to FY 2023 Total			
	Pos.	FTE	Amount	Rate	Pos.	FTE	Amount	Rate	Pos.	FTE	Amount	Rate	Pos.	FTE	Amount	Rate
Capability and Operational Support	-	-	$2,583	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**-**	**-**	**$2,583**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Subtotal Discretionary - Appropriation	-	-	$2,583	-	-	-	-	-	-	-	-	-	-	-	-	-

The FTE Rate calculation does not include Object Class 11.8-Special Personal Services Payments or 13.0-Benefits for Former Personnel

Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
11.8 Special Personal Services Payments	$2,583	-	-	-
Total - Personnel Compensation and Benefits	**$2,583**	**-**	**-**	**-**
Positions and FTE				

Pay Cost Drivers

	FTE	FY 2021 Enacted Amount	Rate	FTE	FY 2022 President's Budget Amount	Rate	FTE	FY 2023 President's Budget Amount	Rate	FTE	FY 2022 to FY 2023 Total Changes Amount	Rate
Other PC&B Costs	-	$2,583	-	-	-	-	-	-	-	-	-	-
Total - Pay Cost Drivers	**-**	**$2,583**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Explanation of Pay Cost Driver

Other PC&B Costs: This Pay Cost Driver represents reimbursable payments that support HHS U.S. Public Health Service Corps detailees, working on CWMD programs. In FY 2022, this funding was transferred to the Mission Support PPA.

Capability and Operations Support – PPA
Non Pay Budget Exhibits
Non Pay Summary
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Capability and Operational Support	$94,382	$71,884	$66,400	($5,484)
Total	**$94,382**	**$71,884**	**$66,400**	**($5,484)**
Subtotal Discretionary - Appropriation	$94,382	$71,884	$66,400	($5,484)

Non Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
21.0 Travel and Transportation of Persons	$1,141	$1,128	$1,062	($66)
24.0 Printing and Reproduction	$28	$28	$22	($6)
25.1 Advisory & Assistance Services	$28,092	$28,371	$22,652	($5,719)
25.2 Other Services from Non-Federal Sources	$16,942	$6,790	$6,383	($407)
25.3 Other Purchases of goods and services	$24,579	$17,638	$19,095	$1,457
25.5 Research & Development Contracts	-	$1,000	$1,000	-
25.7 Operation & Maintenance of Equipment	$3,400	$3,405	$2,518	($887)
26.0 Supplies & Materials	$15,400	$9,224	$9,074	($150)
31.0 Equipment	$3,450	$2,450	$3,200	$750
41.0 Grants, Subsidies, and Contributions	$1,350	$1,850	$1,394	($456)
Total - Non Pay Budget Object Class	**$94,382**	**$71,884**	**$66,400**	**($5,484)**

Non Pay Cost Drivers

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Total Changes
Strategic Planning and Analysis	$11,441	$19,753	$23,875	$4,122
Test and Evaluation (T&E)	$12,300	$15,348	$16,666	$1,318
National BioSurveillance Integration Center	$12,256	$15,756	$16,008	$252
Medical Support and Food, Ag, Vet	$5,232	$12,052	-	($12,052)
Biological Support	$48,310	-	-	-
Other Costs	$4,843	$8,975	$9,851	$876
Total - Non-Pay Cost Drivers	**$94,382**	**$71,884**	**$66,400**	**($5,484)**

Explanation of Non Pay Cost Drivers

Strategic Planning and Analysis: Strategic Planning and Threat Analysis provides resources for the development and coordination of DHS policy, strategy, and plans to counter CBRN and security threats affecting the United States, capability gap and risk assessments, and information analysis and anomaly detection. This includes operationally focused WMD intelligence, sensor data interpretation and tool integration, biosurveillance, operational integration with departmental field operations, and DoD/IC/IA/Foreign Partner collaboration. The increase in FY 2023 reflects the program changes designed to strengthen the strategic planning, risk assessments, capabilities to counter emerging biological and chemical threats, and information analysis capabilities of CWMD.

Test and Evaluation (T&E): Includes funds for T&E Operations, Operational Analysis and Technical Assessments (OATA), Sources and Infrastructure, Standards and Conformity, and Directed Test. The increase reflects operations and infrastructure program change.

National BioSurveillance Integration Center (NBIC): NBIC provides biosurveillance tools, analysis, and information to support common situational awareness and operational responses. NBIC also supports the development and deployment of IT systems to support NBIC's mission, and to provide a framework for collaboration with its interagency National Biosurveillance Integration System (NBIS) partners. The FY 2023 increase reflects operating cost increases for software, subscriptions, and partnership agreements to deliver the same level of current services as in FY 2022.

Medical Support and Food, Ag, Vet Resilience (FAVR): Includes funding for the Chief Medical Officer programs including the Food, Agriculture and Veterinary Defense efforts. These programs are transferred to the Office of Health Security and Resilience within the Office of the Secretary and Executive Management (OSEM) appropriation in FY 2023.

Biological Support: Provides Biodetection capability for aerosolized biological threats, in conjunction with the funds provided as Federal assistance through cooperative agreements (via the Federal Assistance appropriation). Biological Support was transferred to the Federal Assistance Appropriation in FY 2022 to consolidate operations and better fit with the DHS appropriation structure.

Other Costs: Includes funding for operations support including requirements, current operations—watch desk, continuity, and contingency planning, chemical support coordination, and field operations. The change from FY 2022 to FY 2023 reflects the increase of current services for support of the information platform and the increased labor and costs associated with field personnel activities, and CWMD watch desk manning.

Department of Homeland Security

Countering Weapons of Mass Destruction

Procurement, Construction, and Improvements

Fiscal Year 2023

Congressional Justification

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Procurement, Construction, and Improvements
Budget Comparison and Adjustments
Comparison of Budget Authority and Request
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Large Scale Detection Systems	$60,798	$53,667	$46,237	($7,430)
Portable Detection Systems	$26,615	$14,937	$9,067	($5,870)
Integrated Operations Assets and Infrastructure	-	$3,000	-	($3,000)
Total	**$87,413**	**$71,604**	**$55,304**	**($16,300)**
Subtotal Discretionary - Appropriation	$87,413	$71,604	$55,304	($16,300)

The Countering Weapons of Mass Destruction Office (CWMD) Procurement, Construction and Improvements (PC&I) appropriation provides resources necessary for the planning, development, procurement, deployment, operational test and evaluation, and improvement of assets that help the Department of Homeland Security (DHS) and its partners to prevent, protect against, respond to, and mitigate chemical, biological, radiological and nuclear (CBRN) threats and incidents. It also provides for minor construction related to the deployment of Radiation Portal Monitors (RPM).

The PC&I appropriation includes the following Programs, Projects, and Activities (PPA): Large Scale Detection Systems, Portable Detection Systems, and Integrated Operations Assets and Infrastructure.

Large Scale Detection Systems: This PPA includes resources to acquire and deploy large scale Radiation Detection Equipment (RDE), or other related equipment, to support DHS operational end-users and address operational and technical detection requirements. This PPA includes the procurement and/or deployment of RDE systems at user locations throughout the United States, and provides the scientific and technical expertise to design, acquire, and deploy these systems.

Portable Detection Systems: This PPA supports the procurement of chemical, biological, and radiological detection equipment that can be carried, worn, or easily moved to support operational end-users and Special Mission Units. This program also includes limited sustainment of sensors, detectors and/or equipment that CWMD provides to support DHS Components and other first responders.

Integrated Operations Assets and Infrastructure: No funding is included in this PPA in the FY 2023 Budget as the program is being transferred from CWMD to the Office of the Secretary and Executive Management (OSEM). Previous funding included resources for infrastructure development and deployment of the DHS Electronic Health Records System (Medical Information Exchange [MIX]).

Procurement, Construction, and Improvements
Budget Authority and Obligations
(Dollars in Thousands)

	FY 2021	FY 2022	FY 2023
Enacted/Request	**$87,413**	**$71,604**	**$55,304**
Carryover - Start of Year	$124,343	$74,974	$4,631
Recoveries	$3,442	-	-
Rescissions to Current Year/Budget Year	-	-	-
Net Sequestered Resources	-	-	-
Reprogramming/Transfers	$20,000	-	-
Supplementals	-	-	-
Total Budget Authority	**$235,198**	**$146,578**	**$59,935**
Collections - Reimbursable Resources	-	-	-
Collections - Other Sources	-	-	-
Total Budget Resources	**$235,198**	**$146,578**	**$59,935**
Obligations (Actual/Estimates/Projections)	$160,224	$140,764	$58,823
Personnel: Positions and FTE			
Enacted/Request Positions	-	-	-
Enacted/Request FTE	-	-	-
Onboard and Actual FTE			
Onboard (Actual/Estimates/Projections)	-	-	-
FTE (Actual/Estimates/Projections)	-	-	-

Procurement, Construction, and Improvements
Summary of Budget Changes
(Dollars in Thousands)

	Positions	FTE	Amount
FY 2021 Enacted	-	-	**$87,413**
FY 2022 President's Budget	-	-	**$71,604**
FY 2023 Base Budget	-	-	-
Radiation Portal Monitor Program (RPMP)	-	-	$24,042
Radiation Portal Monitor Replacement Program (RPM RP)	-	-	$651
International Rail (IRAIL)	-	-	$9,665
Next Generation Mobile	-	-	$11,879
Personal Radiation Detector	-	-	$80
Basic Handheld RIIDs	-	-	$2,500
Rapid CBRN Equipping	-	-	$5,000
Biological Detection for the 21st Century (BD-21)	-	-	$1,487
Total Investment Elements	-	-	**$55,304**
FY 2023 Request	-	-	**$55,304**
FY 2022 TO FY 2023 Change	-	-	**($16,300)**

Procurement, Construction, and Improvements
Non Pay Budget Exhibits
Non Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
21.0 Travel and Transportation of Persons	$181	$191	$35	($156)
25.1 Advisory & Assistance Services	$11,810	$5,696	$7,224	$1,528
25.2 Other Services from Non-Federal Sources	$900	$5,000	-	($5,000)
25.3 Other Purchases of goods and services	$1,600	$1,800	$4,120	$2,320
31.0 Equipment	$72,922	$58,917	$43,925	($14,992)
Total - Non Pay Budget Object Class	**$87,413**	**$71,604**	**$55,304**	**($16,300)**

Procurement, Construction, and Improvements
Capital Investment Exhibits
Capital Investments
(Dollars in Thousands)

	Acquisition Level	IT/ Non-IT	MAOL	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
N024_000005961 - Radiation Portal Monitor Replacement Program (RPM RP)	Level 3	Non-IT	No	$21,341	$615	$651
N024_000005959 - Personal Radiation Detector	Level 3	Non-IT	No	$16,044	$500	$80
N024_000005960 - Basic Handheld RIIDs	Level 3	Non-IT	No	$5,000	$3,406	$2,500
N024_000005967 - Biological Detection for the 21st Century (BD-21)	Level 1	IT	Yes	-	-	$1,487
N/A - Radiation Portal Monitor Program (RPMP)	Level 3	Non-IT	No	$31,951	$36,413	$24,042
N/A - International Rail (IRAIL)	Level 3	Non-IT	No	$7,506	$16,639	$9,665
N/A - Next Generation Mobile				-	-	$11,879
N/A - Rapid CBRN Equipping	Level 3	Non-IT	No	$2,032	$8,531	$5,000
N/A - Portable Detection Equipment End Items	Level 3	Non-IT	No	$3,539	-	-
N/A - Backpack SLEP	Level 3	Non-IT	No	-	$2,500	-
N/A - Medical Information Exchange (MIX)				-	$3,000	-

Large Scale Detection Systems – PPA

Budget Comparison and Adjustments
Comparison of Budget Authority and Request
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Radiation Portal Monitor Program (RPMP)	$31,951	$36,413	$24,042	($12,371)
Radiation Portal Monitor Replacement Program (RPM RP)	$21,341	$615	$651	$36
International Rail (IRAIL)	$7,506	$16,639	$9,665	($6,974)
Next Generation Mobile	-	-	$11,879	$11,879
Total	**$60,798**	**$53,667**	**$46,237**	**($7,430)**
Subtotal Discretionary - Appropriation	$60,798	$53,667	$46,237	($7,430)

PPA Level I Description

Large Scale Detection Systems PPA includes resources to acquire and deploy large, fixed, and vehicle-mounted Radiation Detection Equipment (RDE), and other related equipment, to support DHS operational end-users address operational and technical detection requirements. This PPA includes the procurement and/or deployment of RDE systems at user locations throughout the United States, and provides the scientific and technical expertise to design, acquire, and deploy these systems.

The Large Scale Detection Systems PPA includes the following projects:

Radiation Portal Monitor Program (RPMP): RPMP is a post-Full Operational Capability (FOC) program to maintain scanning coverage in support of the U.S. Custom and Border Protection (CBP) operation at previously deployed Ports of Entry (POEs). Major activities include decommission, deploy, and redeploy refurbished RPMs to address POE requirements and implement, test, and evaluate improvements to field systems.

Radiation Portal Monitor Replacement Program (RPM RP): RPM RP will acquire and deploy enhanced RPMs to begin recapitalization of the current fleet of fixed radiation portal monitors in support of the CBP operation at various POEs.

International Rail (IRAIL): IRAIL will acquire and deploy a solution to detect and identify nuclear or other radioactive materials out of regulatory control entering the United States via freight rail. This supports the CBP-led rail Non-Intrusive Inspection (NII) Recapitalization Program by procuring, integrating, and testing RDE deployed with rail NII.

Next Generation Mobile: Next Generation Mobile will acquire next generation RPM-based mobile radiation detection systems, known as Movable Radiation Portal Monitor - Seaport Variant (mvRPM-SV), in support of the CBP operations and provide enhanced capabilities that include more agile, surge capable, relocatable, and mobile radiological/nuclear (R/N) scanning capabilities to detect and classify R/N threat sources and weapon components that may be smuggled into the U.S. The program will procure mvRPM-SV systems for CBP to replace the aging mobile Radiation Portal Monitor (mRPM) fleet to ensure CBP can continue to perform its radiation scanning mission at seaports.

Large Scale Detection Systems – PPA
Budget Authority and Obligations
(Dollars in Thousands)

	FY 2021	FY 2022	FY 2023
Enacted/Request	**$60,798**	**$53,667**	**$46,237**
Carryover - Start of Year	$108,850	$64,872	$2,221
Recoveries	$1,387	-	-
Rescissions to Current Year/Budget Year	-	-	-
Net Sequestered Resources	-	-	-
Reprogramming/Transfers	-	-	-
Supplementals	-	-	-
Total Budget Authority	**$171,035**	**$118,539**	**$48,458**
Collections - Reimbursable Resources	-	-	-
Collections - Other Sources	-	-	-
Total Budget Resources	**$171,035**	**$118,539**	**$48,458**
Obligations (Actual/Estimates/Projections)	$106,163	$116,318	$47,346
Personnel: Positions and FTE			
Enacted/Request Positions	-	-	-
Enacted/Request FTE	-	-	-
Onboard and Actual FTE			
Onboard (Actual/Estimates/Projections)	-	-	-
FTE (Actual/Estimates/Projections)	-	-	-

Large Scale Detection Systems – PPA
Summary of Budget Changes
(Dollars in Thousands)

	Positions	FTE	Amount
FY 2021 Enacted	-	-	**$60,798**
FY 2022 President's Budget	-	-	**$53,667**
FY 2023 Base Budget	-	-	-
Radiation Portal Monitor Program (RPMP)	-	-	$24,042
Radiation Portal Monitor Replacement Program (RPM RP)	-	-	$651
International Rail (IRAIL)	-	-	$9,665
Next Generation Mobile	-	-	$11,879
Total Investment Elements	-	-	**$46,237**
FY 2023 Request	-	-	**$46,237**
FY 2022 TO FY 2023 Change	-	-	**($7,430)**

Large Scale Detection Systems – PPA
Non Pay Budget Exhibits
Non Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
21.0 Travel and Transportation of Persons	$136	$180	$25	($155)
25.1 Advisory & Assistance Services	$5,560	$3,500	$6,471	$2,971
25.2 Other Services from Non-Federal Sources	$900	$5,000	-	($5,000)
25.3 Other Purchases of goods and services	$1,600	$1,800	$4,120	$2,320
31.0 Equipment	$52,602	$43,187	$35,621	($7,566)
Total - Non Pay Budget Object Class	**$60,798**	**$53,667**	**$46,237**	**($7,430)**

Large Scale Detection Systems – PPA
Capital Investment Exhibits

Capital Investments
(Dollars in Thousands)

	Acquisition Level	IT/ Non-IT	MAOL	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
N024_000005961 - Radiation Portal Monitor Replacement Program (RPM RP)	Level 3	Non-IT	No	$21,341	$615	$651
N/A - Radiation Portal Monitor Program (RPMP)	Level 3	Non-IT	No	$31,951	$36,413	$24,042
N/A - International Rail (IRAIL)	Level 3	Non-IT	No	$7,506	$16,639	$9,665
N/A - Next Generation Mobile				-	-	$11,879

Radiation Portal Monitor Program (RPMP) – Investment
Capital Investment Exhibits
Procurement/Acquisition Programs
(Dollars in Thousands)

	Acquisition Level	IT/ Non-IT	MAOL	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
N/A - Radiation Portal Monitor Program (RPMP)	Level 3	Non-IT	No	$31,951	$36,413	$24,042

Investment Description

RPMs operated by CBP at U.S. land and sea POEs to scan cargo and conveyances, are a critical component of the Global Nuclear Detection Architecture to prevent the smuggling of Radiological/Nuclear (R/N) threats or threat materials into the United States, while facilitating the flow of legitimate trade and commerce.

The RPMP supports CBP's efforts to continue scanning coverage at POEs. As POEs are reconfigured or expanded, RPMs must be relocated, decommissioned, and/or additional RPM systems must be deployed to uphold current scanning capabilities. In addition, improvements will be deployed to systems in the field to extend the service life of RPMs, including mobile RPMs (mRPM), as well as augment detection efficacy, operational performance, and operational efficiency such as implementing capability to enable Remote Operations by CBP officers.

In FY 2023, CWMD plans to continue managing the decommissioning, inventory, functional checkout and redeployment of legacy RPM systems to meet CBP requirements and to deploy selected improvements that enhance operational or threat detection performance for fielded systems. This program also manages the commercial RPM deployment contract that supports all RPM deployment activities, including deployment of newly acquired RPMs such as RPM Replacement Program (RPM-RP).

Justification

RPMs are an essential capability to protect the Nation from nuclear and radiological threats. Funding in FY 2023 will support fulfilling CWMD's responsibilities in continuing nearly 100 percent scanning of inbound commercial cargo and vehicles using the legacy fleet of RPMs as well as needed improvements to detection efficacy and efficiency to ensure the Department meets the legislative requirements of the *Security and Accountability For Every (SAFE) Port Act of 2006 (Public Law 107-347)*. RPMP ensures statutorily-required radiation scanning coverage to threat detection at the Nation's seaports, land border POEs and Express Consignment and Carrier Facilities (ECCF) without an adverse impact to the flow of commerce. In addition, improvements to RPM equipment and operations that increase operational efficiency allow for CBP officers to be redirected to other law enforcement duties. The RPM Program funding supports construction and modernization activities at previously deployed sites based on available funding and priority of activities.

FY 2021 Key Milestone Events

- Reconfigured RPMs at 19 POEs.
- Deployed remote operations equipment at 10 POEs.

FY 2022 Key Milestone Events

- Reconfigure RPMs at 6 POEs.
- Deploy remote operations equipment at 16 POEs.

FY 2023 Planned Key Milestone Events

- Reconfigure RPMs at 8 POEs.
- Deploy remote operations equipment at 6 POEs.
- Decommission at 2 POEs.
- Reconfiguration Deployment at 3 POEs.

Overall Investment Funding

(Dollars in Thousands)	Prior Years	FY 2021	FY 2022	FY 2023
Operations and Support[1]	-	-	-	-
Procurement, Construction, and Improvements	$69,798	$31,951	$36,413	$24,042
Research and Development	-	-	-	-
Legacy Appropriations	$974,385			
Total Project Funding	**$1,044,183**	**$31,951**	**$36,413**	**$24,042**
Obligations	$1,043,606	$13,602		
Expenditures	$1,043,606	$4		

1 - Note: RPMs are transferred to CBP, which funds associated Operations and Support (O&S) costs separately under their budget authority.

Contract Information (Current/Execution Year, Budget Year)

Contract Number	Contractor	Type	Award Date (mo/yr)	Start Date (mo/yr)	End Date (mo/yr)	EVM in Contract	Total Value (Dollars in Thousands)
70DND19K00000015	Pacific Northwest National Lab	IAA	06/2019	06/2019	05/2024	No	$25,432
HSHQDC-17-IPA006	CBP Border Security Deployment Program (BSDP)	IAA	05/2017	05/2017	05/2022	No	$20,000
70RWMD20Q0000004	Mayvin	Contract Existing	09/2020	01/2021	12/2024	No	$2,032
HSHQDC-17-IPA008	CBP Data Analysis Center – Threat Evaluation Reduction (DAC-TER)	RWA	06/2017	06/2017	06/2022	No	$715

Significant Changes to Investment since Prior Year Enacted
N/A

Investment Schedule

Description	Design Work		Project Work	
	Initiated	Completed	Initiated	Completed
FY 2021				
Deployment/redeployment including but not limited to: • Alexandria Bay, NY (completed Oct 20) • San Ysidro, CA (completed Nov 20) • Garden City, Savannah, GA (completed Jul 21)			FY 2021 Q1	FY 2021 Q4
Continuing System Improvements including Remote Operations • Los Angeles/Long Beach Phase 2 at Pier J (completed May 21), Yusen (completed Aug 21)			FY 2021 Q1	FY 2021 Q4

• Miami Seaport (completed Feb 21) • Port Everglades (completed Aug 21)				
Science and Engineering • International Mail Facility Miami Remote Operations Support (started Oct 20) • Encapsulated PVT Cold Weather Study (completed Jan 21) • 5G Wireless Study (initiated Feb 21)			FY 2021 Q1	FY 2021 Q4
Program Support			FY 2021 Q1	FY 2021 Q4
FY 2022				
Deployment/redeployment including but not limited to: • Vancouver, CAN (projected Nov 22) • Beebe Plain, VT (projected June 22) • Otay Mesa, CA (projected Mar 22)			FY 2022 Q1	FY 2022 Q4
Continuing System Improvements incl Remote Ops Including but not limited to: • Tacoma WUT, WA (start Apr 22) • Terminal 18, Seattle, WA (projected Sep 22) • Barbours Cut Consolidated, TX (projected Sep 22)			FY 2022 Q1	FY 2022 Q4
Science and Engineering Including but not limited to: • Programmable Logic Controller Design at Seagirt (initiated Nov 21) • Remote Officer Experience Interface integration to USPS LAX (Jan 22) • Visual Inspection System security upgrade (initiated Feb 22)			FY 2022 Q1	FY 2022 Q4
Program Support			FY 2022 Q1	FY 2022 Q4
FY 2023				
Deployment/redeployment Including but not limited to: • BOTA, TX (projected Mar 23) • Highgate Springs, VT (projected May 23) • Vancouver, CAN (projected May 23)			FY 2023 Q1	FY 2023 Q4
Continuing System Improvement incl Remote Ops : Including but not limited to: • Ocean Terminal, GA (projected Aug 23) • Manchester, TX (projected Sep 23) • Turning Basin, TX (projected May 23)			FY 2023 Q1	FY 2023 Q4
Science and Engineering Including but not limited to: • RPM Next Generation Windows Interface (projected Oct 22) • Remote Secondary Operations Design • Encapsulated PVT Field Validation			FY 2023 Q1	FY 2023 Q4
Program Support			FY 2023 Q1	FY 2023 Q4

Radiation Portal Monitor Replacement Program (RPM RP) – Investment
Capital Investment Exhibits
Procurement/Acquisition Programs
(Dollars in Thousands)

	Acquisition Level	IT/ Non-IT	MAOL	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
N024_000005961 - Radiation Portal Monitor Replacement Program (RPM RP)	Level 3	Non-IT	No	$21,341	$615	$651

Investment Description
RPMs are used at U.S. land and sea POEs by CBP to scan cargo and conveyances to prevent the smuggling of R/N threats or threat materials into the United States, while facilitating the flow of legitimate trade and commerce. The program supports the needed enhancements to CBP R/N materials detection and identification capabilities at high-volume POEs by addressing the five key drivers of enhancing mission effectiveness: (1) monitoring the state of health; (2) modernizing; (3) addressing emerging needs; (4) increasing reliability and availability; and (5) maintainability.

The focus of the RPM RP is the selective deployment of newly acquired RPMs to enhance mission effectiveness, gain operational efficiencies, and to address emerging mission needs. RPM RP is aligned to several overarching technical requirements for improving R/N detection, including the following areas:

1) Deploy detection systems for scanning of cargo and conveyances for R/N materials at U.S. POEs.
2) Ensure steady state operations of deployed radiation detection systems do not unduly disrupt commercial cargo and passenger flow.

CWMD has procured 225 systems to date, in which nine units were procured as test systems and successfully achieved a full-rate production decision in FY 2021. Following the ordering decision, CWMD procured 216 additional RPMs. The RPM RP program will deploy and install 217 enhanced RPMs (including 1 test system) with the necessary advisory and assistance services to implement, track, and complete the deployment of the RP systems.

Justification
The FY 2023 Budget supports the systems engineering and program support necessary to provide adequate oversight to RP deployment activities.

FY 2021 Key Milestone Events
- Acquired a total of 216 (per the Acquisition Decision Memorandum) additional RP systems.
- Successfully completed the ADE 3 Full-Rate Production Decision.

FY 2022 Key Milestone Events

- Deploy and install approximately 50 RPMs at CBP POEs.
- Declare Initial Operating Capability (IOC) after successful deployments.

FY 2023 Planned Key Milestone Events

- Deploy 102 RPMs to complete the program.

Overall Investment Funding

(Dollars in Thousands)	Prior Years	FY 2021	FY 2022	FY 2023
Operations and Support[1]	-	-	-	-
Procurement, Construction, and Improvements	$141,342	$21,341	$615	$651
Research and Development	-	-	-	-
Legacy Appropriations	$6,460			
Total Project Funding	**$147,802**	**$21,341**	**$615**	**$651**
Obligations	$128,482	$139		
Expenditures	$59,714	$117		

1 - Note: RPMs are transferred to CBP, which funds associated O&S costs separately under their budget authority.

Contract Information (Current/Execution Year, Budget Year)

Contract Number	Contractor	Type	Award Date (mo/yr)	Start Date (mo/yr)	End Date (mo/yr)	EVM in Contract	Total Value (Dollars in Thousands)
70RDND18D00000001	Leidos/L-3 Communications	IDIQ	09/2018	09/2018	09/2033	No	$291,400[1]
70RDND18D00000002	Leidos	IDIQ	09/2018	09/2018	09/2033	No	$291,400[1]
70RDND18D00000003	Smiths Detection	IDIQ	09/2018	09/2018	09/2033	No	$291,400[1]
70RDND18K00000011	Pacific Northwest National Lab	IAA	07/2018	07/2018	09/2022	No	$21,634
70RDND18F00000022	Leidos/L-3 Communications	Task Order	09/2018	09/2018	09/2019	No	$1,922

70RDND18F00000020	Leidos	Task Order	09/2018	09/2018	09/2019	No	$1,467
70RDND18F00000021	Smiths Detection	Task Order	09/2018	09/2018	11/2019	No	$1,554
70RWMD21F00000020	Smiths Detection	Task Order	07/2021	07/2021	07/2022	No	$1,375
70RWMD21F00000038	Smiths Detection	Task Order	09/2021	09/2021	09/2022	No	$32,604
70RWMD21F00000029	Leidos/L-3	Task Order	09/2021	09/2021	09/2022	No	$26,795
70RWMD20F00000034	Mayvin	Contract	09/2020	01/2021	12/2024	No	$651

1 - The program contract ceiling is $291.4M (the total is shared between all three contractors).

Significant Changes to Investment since Prior Year Enacted

CWMD delayed the delivery orders, deployment and installation of the RP systems to resolve technical deficiencies identified during developmental and operational testing and to implement additional network and cyber security requirements provided by CBP. Engineering Change Proposals have been completed to address technical deficiencies and emergent user requirements.

Investment Schedule

Description	Design Work		Project Work	
	Initiated	**Completed**	**Initiated**	**Completed**
FY 2021				
System Procurement (191 Systems, 2 buys)			FY 2021 Q1	FY 2021 Q4
System Deployment and Construction			FY 2021 Q2	FY 2022 Q4
Program Support			FY 2021 Q1	FY 2022 Q1
FY 2022				
System Deployment and Construction			FY 2022 Q1	FY 2023 Q4
Program Support			FY 2022 Q1	FY 2023 Q4
FY 2023				
Program Support			FY 2023 Q1	FY 2024 Q4

International Rail (IRAIL) – Investment
Capital Investment Exhibits
Procurement/Acquisition Programs
(Dollars in Thousands)

	Acquisition Level	IT/ Non-IT	MAOL	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
N/A - International Rail (IRAIL)	Level 3	Non-IT	No	$7,506	$16,639	$9,665

Investment Description
The International Rail (IRAIL) Program will acquire and deploy fixed RDE in the form of RPM configured specifically for the freight rail environment (rail variant) and integrated with the CBP High Energy Rail Radiography system to allow for side-by-side operation. The RDE will detect and identify nuclear or other radioactive materials out of regulatory control entering the United States via freight rail cargo through the active rail POEs. The CWMD IRAIL Program will acquire and deploy the solution in coordination with the CBP NII Program, which is recapitalizing aging NII High Energy Rail Radiography systems at rail POEs. Rail RDE will be procured as a separate equipment item on CBP's NII recapitalization contract, with system configuration, integration, and testing to be conducted by the equipment vendors, and additional government testing to ensure the NII Radiography systems and RDE achieve performance requirements and function in as an integrated capability to include blanking capability to allow RDE operation in close proximity to NII systems.

Justification
The FY 2023 Budget provides the RDE component of the integrated solution, including planning, procurement, design, development, configuration, integration, test, vendor oversight, and deployment of configured RPM systems for operation in a rail environment and capable of functioning side-by-side with the CBP High Energy Rail system.

FY 2021 Key Milestone Events
- Identified up to 12 site locations for deployment in conjunction with CBP.
- Initiated required infrastructure work at up to 10 of the initial 12 CBP Field Offices to support deployment of integrated RDE systems and operational test.
- Developed and release the RDE integration request for quote.

FY 2022 Key Milestone Events
- Award CBP RDE integration task order.
- Initiate data collection and field validation of blanking capability
- Acquire special equipment for Operational Testing of integrated system.
- Initiate/complete operational testing of up to three integrated systems.

- Conduct verification testing of up to three integrated systems.
- Deploy three integrated systems coinciding with CBP's NII deployment schedule.

FY 2023 Planned Key Milestone Events
- Deploy nine integrated systems coinciding with CBP's NII deployment schedule.
- Complete field validation of blanking capability
- Conduct field acceptance of nine deployed NII integrated RDE systems.

Overall Investment Funding

(Dollars in Thousands)	Prior Years	FY 2021	FY 2022	FY 2023
Operations and Support[1]	-	-	-	-
Procurement, Construction, and Improvements	$9,600	$7,506	$16,639	$9,665
Research and Development	$5,750	-	-	-
Legacy Appropriations	-			
Total Project Funding	**$15,350**	**$7,506**	**$16,639**	**$9,665**
Obligations	$8,864	$6,764		
Expenditures	$6,553	$632		

1 - Note: This technology is transferred to CBP, which funds associated O&S costs separately under their budget authority.

Contract Information (Current/Execution Year, Budget Year)

Contract Number	Contractor	Type	Award Date (mo/yr)	Start Date (mo/yr)	End Date (mo/yr)	EVM in Contract	Total Value *(Dollars in Thousands)*
TBD	CBP	IAA New	03/2022	04/2022	09/2023	No	$13,040,128.00
TBD	CBP	IAA New	T05/2022	06/2022	09/20/23	No	$3,299,436.00
TBD	PNNL	Existing IAA	08/2021	08/2021	12/2022	No	$3,735
HSHQDN-16-X-00047[1]	Pacific Northwest National Lab	Existing IAA	08/2016	08/2016	08/2021	No	$2,990

| HSHQDC21ACQ006 | CBP | Existing IAA | 06/2021 | 06/2021 | 09/2022 | No | $2,962 |
| 70RWMD20Q0000004 | Mayvin | Existing Contract | 09/2020 | 01/2021 | 12/2024 | No | $2,000 |

1 - Note: This IAA is shared among several CWMD programs.

Significant Changes to Investment since Prior Year Enacted

Schedule continues to be coordinated with CBP. Delays experienced by CBP NII portion of this joint program due to coordination with rail owners impacts the IRAIL schedule.

Investment Schedule

Description	Design Work		Project Work	
	Initiated	**Completed**	**Initiated**	**Completed**
FY 2021				
Infrastructure and system design and development.	FY 2021 Q1	FY 2022 Q4		
Test support, contract development support.			FY 2021 Q1	FY 2022 Q4
FY 2022				
RDE integration award, test system procurement.			FY 2022 Q1	FY 2023 Q4
Developmental testing (requirements validation).			FY 2022 Q1	FY 2023 Q4
FY 2023				
Deployment of first three systems, coordinated with CBP.			FY 2023 Q2	FY 2024 Q2
Three field operational tests.			FY 2023 Q4	FY 2024 Q4

Next Generation Mobile – Investment
Capital Investment Exhibits
Procurement/Acquisition Programs
(Dollars in Thousands)

	Acquisition Level	IT/ Non-IT	MAOL	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
N/A - Next Generation Mobile				-	-	$11,879

Investment Description

This program will acquire next generation RPM-based mobile radiation detection systems, known as Movable Radiation Portal Monitor - Seaport Variant (mvRPM-SV), in support of the CBP operations and provide enhanced capabilities that include more agile, surge capable, relocatable, and mobile radiological/nuclear (R/N) scanning capabilities to detect and classify R/N threat sources and weapon components that may be smuggled into the U.S. In FY 2023, the program will procure approximately 12 mvRPM-SV systems to support Operational Test and Evaluation and initial deployment of the replacement units. CWMD plans to replace the aging fleet of 61 mobile Radiation Portal Monitor (mRPM) to ensure CBP can continue to perform its radiation scanning mission at seaports.

Justification

The FY 2023 Budget will support Test and Evaluation activities and procure approximately 12 systems to support the test and initial replacement units.

FY 2023 Planned Key Milestone Events
- Operational Test and Evaluation of mvRPM-sv solutions.
- Procure approximately 12 mvRPM-SV mobile systems.

Overall Investment Funding

(Dollars in Thousands)	Prior Years	FY 2021	FY 2022	FY 2023
Operations and Support[1]	-	-	-	-
Procurement, Construction, and Improvements	-		-	$11,879
Research and Development	-	-	-	-
Legacy Appropriations	-			
Total Project Funding	-	-	-	**$11,879**
Obligations	-	-		
Expenditures	-	-		

1 - Note: This technology is transferred to CBP, which funds associated O&S costs separately under their budget authority.

Contract Information (Current/Execution Year, Budget Year)

Contract Number	Contractor	Type	Award Date (mo/yr)	Start Date (mo/yr)	End Date (mo/yr)	EVM in Contract	Total Value (Dollars in Thousands)
N/A							

Significant Changes to Investment since Prior Year Enacted
N/A

Investment Schedule

Description	Design Work		Project Work	
	Initiated	Completed	Initiated	Completed
FY 2023				
Procure 12 mvRPM-SV systems			FY 2023 Q1	FY 2024 Q1

Portable Detection Systems – PPA

Budget Comparison and Adjustments
Comparison of Budget Authority and Request
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Personal Radiation Detector	$16,044	$500	$80	($420)
Basic Handheld RIIDs	$5,000	$3,406	$2,500	($906)
Rapid CBRN Equipping	$2,032	$8,531	$5,000	($3,531)
Portable Detection Equipment End Items	$3,539	-	-	-
Backpack SLEP	-	$2,500	-	($2,500)
Biological Detection for the 21st Century (BD-21)	-	-	$1,487	$1,487
Total	**$26,615**	**$14,937**	**$9,067**	**($5,870)**
Subtotal Discretionary - Appropriation	$26,615	$14,937	$9,067	($5,870)

PPA Level I Description

The Portable Detection Systems PPA supports the procurement of chemical, biological, radiological, and nuclear (CBRN) detection equipment that can be carried, worn, or easily moved to support operational end-users. This program also includes limited sustainment of sensors, detectors and/or equipment that CWMD provides to support DHS Components and other first responders.

The Portable Detection Systems PPA includes the following projects:

Personal Radiation Detectors (PRD): PRDs are pager-size devices worn by an operator at all times for the purposes of R/N detection. They monitor the user's environment and alert operators when radioactivity levels above the natural background are detected, at which time the user would call for an identification device.

Basic Handheld (BHH) Radioisotope Identification Devices (RIID): BHH RIIDs are used for search, detection, localization, and identification of R/N materials, and for quick and accurate measurement of dose rate and count rate. These devices also support secondary screening and small-area searches. Advanced Handheld RIIDs are deployed and are included in this project to maintain operational capability.

Rapid CBRN Equipping: Critical counter-WMD capabilities including detection equipment, personal protective equipment, and decontamination equipment for DHS Special Mission Units and other operational entities requiring urgently needed CBRN equipment.

Portable Detection End Items: Next-Generation CWMD Sensors provided new capabilities to DHS Federal partners and State/local users that were successfully developed through Next Generation CWMD Systems R&D funding or through prototyping efforts in the R&D Rapid Capabilities PPA.

Backpack Service Life Extension Program (SLEP): Backpacks are used for the interdiction of R/N materials at the Nation's land and maritime borders. This project will implement a Service Life Extension Program (SLEP) on DHS's entire inventory of 600 RadPack backpack units.

Bio Detection for the 21st Century (BD21): BD21 will deploy an integrated capability that provides timely anomaly detection of airborne biological threat agents, field screening, and the ability to deliver biological samples to diagnostic laboratories under the U.S. Department of Health & Human Services (HHS) to support confirmatory identification. BD21 will provide first responders with timely and actionable information to support rapid decisions and initial actions to minimize the impact of exposure and accelerate recovery activities of a bio-attack.

Portable Detection Systems – PPA
Budget Authority and Obligations
(Dollars in Thousands)

	FY 2021	FY 2022	FY 2023
Enacted/Request	**$26,615**	**$14,937**	**$9,067**
Carryover - Start of Year	$15,493	$3,398	$2,410
Recoveries	$2,055	-	-
Rescissions to Current Year/Budget Year	-	-	-
Net Sequestered Resources	-	-	-
Reprogramming/Transfers	-	-	-
Supplementals	-	-	-
Total Budget Authority	**$44,163**	**$18,335**	**$11,477**
Collections - Reimbursable Resources	-	-	-
Collections - Other Sources	-	-	-
Total Budget Resources	**$44,163**	**$18,335**	**$11,477**
Obligations (Actual/Estimates/Projections)	$40,765	$14,742	$11,477
Personnel: Positions and FTE			
Enacted/Request Positions	-	-	-
Enacted/Request FTE	-	-	-
Onboard and Actual FTE			
Onboard (Actual/Estimates/Projections)	-	-	-
FTE (Actual/Estimates/Projections)	-	-	-

Portable Detection Systems – PPA
Summary of Budget Changes
(Dollars in Thousands)

	Positions	FTE	Amount
FY 2021 Enacted	-	-	**$26,615**
FY 2022 President's Budget	-	-	**$14,937**
FY 2023 Base Budget	-	-	-
Personal Radiation Detector	-	-	$80
Basic Handheld RIIDs	-	-	$2,500
Rapid CBRN Equipping	-	-	$5,000
Biological Detection for the 21st Century (BD-21)	-	-	$1,487
Total Investment Elements	-	-	**$9,067**
FY 2023 Request	-	-	**$9,067**
FY 2022 TO FY 2023 Change	-	-	**($5,870)**

Portable Detection Systems – PPA
Non Pay Budget Exhibits
Non Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
21.0 Travel and Transportation of Persons	$45	$11	$10	($1)
25.1 Advisory & Assistance Services	$6,250	$2,196	$753	($1,443)
31.0 Equipment	$20,320	$12,730	$8,304	($4,426)
Total - Non Pay Budget Object Class	**$26,615**	**$14,937**	**$9,067**	**($5,870)**

Portable Detection Systems – PPA
Capital Investment Exhibits
Capital Investments
(Dollars in Thousands)

	Acquisition Level	IT/ Non-IT	MAOL	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
N024_000005959 - Personal Radiation Detector	Level 3	Non-IT	No	$16,044	$500	$80
N024_000005960 - Basic Handheld RIIDs	Level 3	Non-IT	No	$5,000	$3,406	$2,500
N024_000005967 - Biological Detection for the 21st Century (BD-21)	Level 1	IT	Yes	-	-	$1,487
N/A - Rapid CBRN Equipping	Level 3	Non-IT	No	$2,032	$8,531	$5,000
N/A - Portable Detection Equipment End Items	Level 3	Non-IT	No	$3,539	-	-
N/A - Backpack SLEP	Level 3	Non-IT	No	-	$2,500	-

Personal Radiation Detectors – Investment
Capital Investment Exhibits
Procurement/Acquisition Programs
(Dollars in Thousands)

	Acquisition Level	IT/ Non-IT	MAOL	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
N024_000005959 - Personal Radiation Detector	Level 3	Non-IT	No	$16,044	$500	$80

Investment Description
Personal Radiation Detectors (PRDs) are pager-size devices worn by an operator at all times for the purposes of R/N detection. They monitor the user's environment and alert operators when radioactivity levels above the natural background are detected. CWMD procures two types of PRD variants: a general purpose variant and a maritime variant.

Justification
The FY 2023 Budget supports the advisory and assistance services necessary to complete the PRD deployment and conduct the post implementation review.

FY 2021 Key Milestone Events
- Procured 13,620 PRDs for CBP.
- Procured 239 PRDs for TSA.
- Procured 2,364 PRDs for USCG.

FY 2022 Key Milestone Events
- Provide continued program support to acquire and deploy CBRN detection capabilities for DHS operational components and SLTT.
- Continue supporting deployment of systems procured in FY 2021 for operational components.

FY 2023 Planned Key Milestone Events
- Provide continued program support to acquire and deploy CBRN detection capabilities for DHS operational components and SLTT.
- Conduct a post-implementation review of PRD program.

Overall Investment Funding

(Dollars in Thousands)	Prior Years	FY 2021	FY 2022	FY 2023
Operations and Support[1]	-	-	-	-
Procurement, Construction, and Improvements	$22,404	$16,044	$500	$80
Research and Development	-	-	-	-
Legacy Appropriations	$11,000			
Total Project Funding	**$33,404**	**$16,044**	**$500**	**$80**
Obligations	$33,404	$10,140		
Expenditures	$33,171	$5,904		

1 - Note: PRDs are transferred to CBP, TSA, and the USCG which fund associated O&S costs separately from their appropriations.

Contract Information (Current/Execution Year, Budget Year)

Contract Number	Contractor	Type	Award Date (mo/yr)	Start Date (mo/yr)	End Date (mo/yr)	EVM in Contract	Total Value (Dollars in Thousands)
HSHQDN-17-D-00001	PRD: Polimaster, Inc.	IDIQ	09/2017	09/2017	09/2022	No	$90,000[1]
HSHQDN-17-D-00002	PRD: Thermo-Fisher	IDIQ	09/2017	09/2017	09/2022	No	$90,000[1]
GS-07F-0248T	Maritime Variant PRD: William F. Hawk Consulting, Inc	BPA	09/2019	09/2019	09/2024	No	$35,000
70RWMD20Q0000004	Mayvin	Contract Existing	09/2020	01/2021	12/2024	No	$1,080

1 - The program contract ceiling is $90.0M (the total is shared between the two contractors).

Significant Changes to Investment since Prior Year Enacted
In FY 2021, CWMD accelerated PRD fielding for USCG and CBP at their request. PRDs was fully funded through a reallocation request using source funding from the FY 2021 BHH $5.0M and FY 2021 Next Gen CBRN Sensor $3.5M. The larger quantity buy in FY 2021 leveraged significant quantity discounts, resulting in overall cost savings to the Government. Additionally, the vendor provided a four-year warranty for this larger quantity buy, which resulted in significant O&M cost savings to the Government.

Description	Design Work		Project Work	
	Initiated	**Completed**	**Initiated**	**Completed**
FY 2021				
PRD equipment procurement			FY 2021 Q4	FY 2023 Q1
FY 2022				
Program Support to complete the PRD deployment and initiate the post implementation review			FY 2022 Q1	FY 2023 Q1
FY 2023				
Program Support			FY 2023 Q1	FY 2024 Q1

Basic Handheld RIIDs – Investment
Capital Investment Exhibits
Procurement/Acquisition Programs
(Dollars in Thousands)

	Acquisition Level	IT/ Non-IT	MAOL	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
N024_000005960 - Basic Handheld RIIDs	Level 3	Non-IT	No	$5,000	$3,406	$2,500

Investment Description
Basic Handheld (BHH) Radioisotope Identification Devices (RIID) are used for search, detection, localization, and identification of R/N materials, and for quick and accurate measurement of dose rate and count rate. These devices also support secondary screening and small-area searches. Advanced Handheld RIIDs are also included in this investment as needed to maintain operational capability. This project will conduct a Service Life Extension Program (SLEP) on CBPs fleet of approximately 730 RadSeeker DL devices, which represents one-third of CBP's entire RIID fleet.

Justification
The FY 2023 Budget funds a SLEP of Radseeker DL devices to replace the internal radiological source used for calibration and to update critical components so these systems will remain operationally effective for several more years. This SLEP is a cost-effective means of maintaining existing capability of the RIID fleet. Additional funding is provided for planning the recapitalization, if necessary, of the remaining RIID fleet with commercially available products.

FY 2021 Key Milestone Events
- Continued refurbishment and service life extension of RadSeeker DL RIIDs for CBP.

FY 2022 Key Milestone Events
- Continue refurbishment and service life extension of RadSeeker DL RIIDs for CBP.
- Initiate planning of recapitalization of the remainder of CBP's RIID fleet.

FY 2023 Planned Key Milestone Events
- Complete refurbishment and service life extension of RadSeeker DL RIIDs for CBP.
- Complete planning and support of recapitalization of the remainder of CBP's RIID fleet.

Overall Investment Funding

(Dollars in Thousands)	Prior Years	FY 2021	FY 2022	FY 2023
Operations and Support[1]	-	-	-	-
Procurement, Construction, and Improvements	$20,077	$5,000	$3,406	$2,500
Research and Development	-	-	-	-
Legacy Appropriations	$7,708			
Total Project Funding	**$27,785**	**$5,000**	**$3,406**	**$2,500**
Obligations	$16,601	-$5,000		
Expenditures	$14,672	-		

1 - Note: BHH RIIDs are transferred to CBP and USCG, which fund associated O&S costs separately from their appropriations.

Contract Information (Current/Execution Year, Budget Year)

Contract Number	Contractor	Type	Award Date (mo/yr)	Start Date (mo/yr)	End Date (mo/yr)	EVM in Contract	Total Value (Dollars in Thousands)
70RWMDD20D00000001	BHH: Symetrica, Inc.	IDIQ TO 1	09/2020	10/2020	09/2021	No	$3,117
70RWMDD20D00000001	BHH: Symetrica, Inc.	IDIQ TO 3	09/2022	10/2022	09/2023	No	$1,941
70RWMDD20D00000001	BHH: Symetrica, Inc.	IDIQ TO 2	09/2021	10/2021	09/2022	No	$1,940
70RWMD20Q0000004	Mayvin	Contract Existing	09/2020	01/2021	12/2024	No	$1,000

Significant Changes to Investment since Prior Year Enacted
N/A

Investment Schedule

Description	Design Work		Project Work	
	Initiated	**Completed**	**Initiated**	**Completed**
FY 2021				
BHH equipment service life extension.			FY 2021 Q4	FY 2022 Q4
FY 2022				
BHH equipment service life extension.			FY 2022 Q1	FY 2022 Q4
BHH program documentation, analysis and Q&A check.			FY 2022 Q1	FY 2022 Q4
FY 2023				
BHH equipment service life extension.			FY 2023 Q1	FY 2023 Q4
BHH program documentation, analysis and Q&A check.			FY 2023 Q1	FY 2023 Q3

Rapid CBRN Equipping – Investment
Capital Investment Exhibits
Procurement/Acquisition Programs
(Dollars in Thousands)

	Acquisition Level	IT/ Non-IT	MAOL	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
N/A - Rapid CBRN Equipping	Level 3	Non-IT	No	$2,032	$8,531	$5,000

Investment Description

CWMD will rapidly equip DHS Special Mission Units and other operational entities requiring urgently needed CBRN equipment with critical counter-WMD capabilities including detection and identification equipment, personal protective equipment, and decontamination equipment. This equipment is necessary to enable mission success and ensure the unimpeded employment of DHS Special Mission Units in potentially toxic/hazardous environments to execute their counter-WMD mission. CWMD fills the role to acquire the capability with sustainment being provided by the DHS Operational Components.

Justification

The FY 2023 Budget funds the rapid procurement and deployment of various types and quantities of countering-WMD capabilities based on urgent capability needs analyses. This program provides CBRN detection, identification equipment, as well as personal protective equipment and decontamination equipment to address capability gaps for operational users. In previous years, this program was called "Special Mission Unit Program" and only provided support to DHS Special Mission Units within DHS Operational Components. In FY 2022, this program was expanded to provide detection support to additional DHS Operational Units beyond Special Mission Units.

FY 2021 Key Milestone Events

- Met with Special Mission Units to understand their needs.
- Worked with the Special Mission Units to finalize/submit any new request for resources.
- Gathered and prioritized requirements to reduce Special Mission Unit mission gaps.
- Acquired and deployed one or more types of countering-WMD capabilities.
- Ensured delivery of equipment to DHS Operational Components.

FY 2022 Key Milestone Events
- Meet with DHS Operational Components and end users to understand their needs.
- Work with the DHS Operational Components and end users to finalize/submit any new request for resources.
- Gather and prioritize requirements to reduce DHS Operational Components and other ends users' CWMD capability gaps.
- Acquire and deploy one or more types of countering-WMD capabilities.
- Ensure Delivery of Equipment to DHS Operational Components and other end users.

FY 2023 Planned Key Milestone Events
- Meet with DHS Operational Components and end users to understand their needs.
- Work with the DHS Operational Components and end users to finalize/submit any new request for resources.
- Gather and prioritize requirements to reduce DHS Operational Components and other ends users' CWMD capability gaps.
- Acquire and deploy one or more types of countering-WMD capabilities.
- Ensure delivery of equipment to DHS Operational Components and other end users.

Overall Investment Funding

(Dollars in Thousands)	Prior Years	FY 2021	FY 2022	FY 2023
Operations and Support	-	-	-	-
Procurement, Construction, and Improvements	$2,000	$2,032	$8,531	$5,000
Research and Development	-	-	-	-
Legacy Appropriations	-			
Total Project Funding	**$2,000**	**$2,032**	**$8,531**	**$5,000**
Obligations	$2,000	$1,883		
Expenditures	$2,000	$987		

Contract Information (Current/Execution Year, Budget Year)

Contract Number	Contractor	Type	Award Date (mo/yr)	Start Date (mo/yr)	End Date (mo/yr)	EVM in Contract	Total Value *(Dollars in Thousands)*
70RWMD20K00000005	DLA IDIQ - IAA	FFP	05/2020	05/2020	05/2022	No	$9,000
70RWMD20K00000001	JPEO CBRND - IAA	FFP	04/20	04/20	04/25	No	$9,000
70RWMD20K00000014	JPEO Sensors – IAA	FFP	07/20	07/20	07/25	No	$9,000
TBD	GSA Schedule	FFP	TBD	TBD	TBD	No	$500
TBD	DLA IDIQ - IAA	FFP	TBD	TBD	TBD	No	$500

Significant Changes to Investment since Prior Year Enacted
N/A

Investment Schedule

Description	Design Work		Project Work	
	Initiated	Completed	Initiated	Completed
FY 2021				
Successfully executed Rapid Procurements for DHS Special Mission Unit CBRN Equipment, including more than 15 contracts, 78 unique items (of various quantities; over 13k items cumulative) of detection, decontamination and PPE equipment.			FY 2021 Q1	FY 2021 Q4
FY 2022				
Procure 129 unique WMD detection, decontamination, and PPE equipment items for 7 different DHS customers.			FY 2022 Q1	FY 2022 Q4
FY 2023				
Continue procurements for DHS Special Mission Units and other operational end users with critical Counter-WMD capabilities. Responsive to emerging requirements necessary to enable mission success executing their Countering-WMD mission.			FY 2023 Q1	FY 2023 Q4

Portable Detection Equipment End Items – Investment
Itemized Procurements
End Items Purchases
(Dollars in Thousands)

	Acquisition Level	IT/ Non-IT	MAOL	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
N/A - Portable Detection Equipment End Items	Level 3	Non-IT	No	$3,539	-	-

End Items Breakdown *(Dollars in Thousands)*	FY 2021 Enacted		FY 2022 President's Budget		FY 2023 President's Budget	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Next-Gen CBRN Sensors		$3,539[1]	-	-	-	-
Total		**$3,539**	**-**	**-**	**-**	**-**

1 - Funding was reprogrammed to move the PRDs to FOC in FY21.

End Items Description

- Next-Generation CWMD Sensors: These sensors will provide new capabilities to DHS Federal partners and State/local users that were successfully developed through Next Generation CWMD Systems R&D funding or through prototyping efforts. Material solutions will be driven by user generated operational requirements to close documented capability gaps. Due to urgent prioritization of CBP and USCG of PRD fielding, funding was reprogrammed to PRD investment in FY 2021.

Backpack SLEP – Investment
Capital Investment Exhibits
Procurement/Acquisition Programs
(Dollars in Thousands)

	Acquisition Level	IT/ Non-IT	MAOL	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
N/A - Backpack SLEP	Level 3	Non-IT	No	-	$2,500	-

Investment Description
Backpacks are used for the interdiction of R/N materials at the Nation's land and maritime borders. This project will implement a Service Life Extension Program (SLEP) on DHS's entire inventory of 600 RadPack backpack units.

Justification
No funding requested in the FY 2023 Budget.

FY 2021 Key Milestone Events
- Obtained approval to implement the backpack SLEP.

FY 2022 Key Milestone Events
- Award a contract to implement the backpack SLEP.
- Initiate the processing of backpacks under the SLEP.

FY 2023 Planned Key Milestone Events
- N/A

Overall Investment Funding

(Dollars in Thousands)	Prior Years	FY 2021	FY 2022	FY 2023
Operations and Support	-	-	-	-
Procurement, Construction, and Improvements	-	-	$2,500	-
Research and Development	-	-	-	-
Legacy Appropriations	-			

Portable Detection Systems – PPA   **Backpack SLEP**

(Dollars in Thousands)	Prior Years	FY 2021	FY 2022	FY 2023
Total Project Funding	-	–	$2,500	-
Obligations	-	–		
Expenditures	-	–		

Contract Information (Current/Execution Year, Budget Year)

Contract Number	Contractor	Type	Award Date (mo/yr)	Start Date (mo/yr)	End Date (mo/yr)	EVM in Contract	Total Value *(Dollars in Thousands)*
N/A							

Significant Changes to Investment since Prior Year Enacted
N/A

Investment Schedule

Description	Design Work		Project Work	
	Initiated	Completed	Initiated	Completed
FY 2021				
Received approval to implement the Backpack SLEP			FY 2021 Q3	FY 2021 Q3
FY 2022				
Backpack SLEP processing (contract award planned for Q3)			FY 2022 Q3	FY 2025 Q2
FY 2023				
Process backpacks, rotate units to maintain operational capability			FY 2023 Q1	FY 2025 Q2

Biological Detection for the 21st Century (BD-21) – Investment
Capital Investment Exhibits
Procurement/Acquisition Programs
(Dollars in Thousands)

	Acquisition Level	IT/ Non-IT	MAOL	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
N024_000005967 - Biological Detection for the 21st Century (BD-21)	Level 1	IT	Yes	-	-	$1,487

Investment Description

BD21 is a DHS CWMD program to deploy an integrated capability that provides timely anomaly detection of airborne biological threat agents, field screening, and the ability to deliver biological samples to diagnostic laboratories under the U.S. Department of Health & Human Services (HHS) to support confirmatory identification. BD21 will provide first responders with timely and actionable information to support rapid decisions and initial actions to minimize the impact of exposure and accelerate recovery activities of a bio-attack. Currently, there are four components under consideration in the BD21 paradigm: biological sensors, anomaly algorithms, collectors, and field screening devices.

Justification

The FY 2023 Budget will support site selection, planning and preparation for Operational Test & Evaluation (OT&E). It will support acquiring system technology elements, site surveys, site selection, and system fielding to ensure that BD21 can be assessed in an operational environment to close biodetection capability gaps, as stated in the 2019 Biodetection Mission Need Statement.

FY 2023 Planned Key Milestone Events

- Conduct site selection, planning and preparation for Operational Test and Evaluation

Overall Investment Funding

(Dollars in Thousands)	Prior Years	FY 2021	FY 2022	FY 2023
Operations and Support	-	-	-	-
Procurement, Construction, and Improvements	-	-	-	$1,487
Research and Development	-	-	-	-
Legacy Appropriations	-			

Total Project Funding	-	-	-	**$1,487**
Obligations	-	-		
Expenditures	-	-		

Contract Information (Current/Execution Year, Budget Year)

Contract Number	Contractor	Type	Award Date (mo/yr)	Start Date (mo/yr)	End Date (mo/yr)	EVM in Contract	Total Value *(Dollars in Thousands)*
TBD	TBD	TBD	TBD	TBD	TBD	TBD	$1,487

Significant Changes to Investment since Prior Year Enacted
N/A

Investment Schedule

Description	Design Work		Project Work	
	Initiated	**Completed**	**Initiated**	**Completed**
FY 2023				
Conduct Site Survey of various potential locations.			FY 2023 Q1	FY 2023 Q3
Selection of Facility and Terms of Agreement.			FY 2023 Q3	FY 2023 Q3
Conduct site preparations required to enable OT&E.			FY2023 Q3	FY2024 Q1

Integrated Operations Assets and Infrastructure – PPA

Budget Comparison and Adjustments
Comparison of Budget Authority and Request
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Medical Information Exchange (MIX)	-	$3,000	-	($3,000)
Total	**-**	**$3,000**	**-**	**($3,000)**
Subtotal Discretionary - Appropriation	-	$3,000	-	($3,000)

PPA Level I Description

This PPA does not include funding in FY 2023 as the program is transferred from CWMD to the Office of the Secretary and Executive Management (OSEM). Previous funding included resources for infrastructure development and deployment of the DHS Electronic Health Records System (Medical Information Exchange [MIX]).

Integrated Operations Assets and Infrastructure – PPA
Budget Authority and Obligations
(Dollars in Thousands)

	FY 2021	FY 2022	FY 2023
Enacted/Request	-	**$3,000**	-
Carryover - Start of Year	-	$6,704	-
Recoveries	-	-	-
Rescissions to Current Year/Budget Year	-	-	-
Net Sequestered Resources	-	-	-
Reprogramming/Transfers	$20,000	-	-
Supplementals	-	-	-
Total Budget Authority	**$20,000**	**$9,704**	-
Collections - Reimbursable Resources	-	-	-
Collections - Other Sources	-	-	-
Total Budget Resources	**$20,000**	**$9,704**	-
Obligations (Actual/Estimates/Projections)	$13,296	$9,704	-
Personnel: Positions and FTE			
Enacted/Request Positions	-	-	-
Enacted/Request FTE	-	-	-
Onboard and Actual FTE			
Onboard (Actual/Estimates/Projections)	-	-	-
FTE (Actual/Estimates/Projections)	-	-	-

Integrated Operations Assets and Infrastructure – PPA
Summary of Budget Changes
(Dollars in Thousands)

	Positions	FTE	Amount
FY 2021 Enacted	-	-	-
FY 2022 President's Budget	-	-	$3,000
FY 2023 Base Budget	-	-	-
FY 2023 Request	-	-	-
FY 2022 TO FY 2023 Change	-	-	($3,000)

Integrated Operations Assets and Infrastructure – PPA
Non Pay Budget Exhibits
Non Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
31.0 Equipment	-	$3,000	-	($3,000)
Total - Non Pay Budget Object Class	**-**	**$3,000**	**-**	**($3,000)**

Integrated Operations Assets and Infrastructure – PPA
Capital Investment Exhibits

Capital Investments
(Dollars in Thousands)

	Acquisition Level	IT/ Non-IT	MAOL	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
N/A - Medical Information Exchange (MIX)				-	$3,000	-

Department of Homeland Security

Countering Weapons of Mass Destruction

Research and Development

Fiscal Year 2023

Congressional Justification

Table of Contents

Research and Development
Budget Comparison and Adjustments
Comparison of Budget Authority and Request
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Transformational Research and Development	$23,892	$31,378	$37,004	$5,626
Technical Forensics	$7,100	$3,500	-	($3,500)
Detection Capability Development	$24,317	$30,831	$45,511	$14,680
Rapid Capabilities	$10,000	-	-	-
Total	**$65,309**	**$65,709**	**$82,515**	**$16,806**
Subtotal Discretionary - Appropriation	$65,309	$65,709	$82,515	$16,806

The Countering Weapons of Mass Destruction Office (CWMD) Research and Development (R&D) appropriation provides resources necessary to identify, explore, and demonstrate new technologies and capabilities that will help enable the Department of Homeland Security (DHS) and its partners to succeed in our mission to safeguard the American people, our homeland, and our values. R&D funds are used to support the following Technology Readiness Levels (TRLs):

Basic Research		Applied Research		Technology Development		Technology Demonstration	System Development
TRL-1	TRL-2	TRL-3	TRL-4	TRL-5		TRL-6	TRL-7
Basic Principles Observed/ Reported	Technology Concept/Application Formulated	Critical Function or Characteristic Proof of Concept	Validation in Lab Environment	Validation in Relevant Environment		System Prototypes in Relevant Environment	System Prototypes in Operational Environment

The appropriation includes the following Program, Project, and Activities (PPA's):

Transformational Research and Development: This program covers basic and applied research and technology development at TRL 1-5 related to chemical, biological, radiological, nuclear (CBRN) threat detection; counter WMD data analytics and anomaly detection; Small Business Innovative Research (SBIR) project; and Food, Agriculture, Veterinary Defense (FAVD).

Technical Forensics: This program advances the U.S. Government's technical capability to rapidly, accurately, and credibly characterize and identify the nature, origin, and history of nuclear materials interdicted before a detonation. In January 2021, with the signing of National Security Presidential Memorandum (NSPM) 35, all research and development related to pre-detonation nuclear materials was transitioned from CWMD to the National Nuclear Security Administration (NNSA). CWMD continues to support the National Nuclear Forensics Expertise Development program that addresses the enduring challenge of sustaining a preeminent workforce of scientists and policymakers that are educated and trained in nuclear forensics-related specialties by funding research projects.

Detection Capability Development: This project supports capability development projects that are characterized as late-stage TRL (6-7) and are anticipated to lead to a materiel solution. CWMD acquisition activities adhere to the Department's integrated lifecycle management approach to develop, acquire, procure, deploy and sustain CBRN detection systems for operational customers that operate the systems in the field.

Rapid Capabilities: CWMD executes rapid and/or sensitive acquisition development and procurement activities for CBRN detection systems in response to emerging operational needs across the CWMD mission space. Rapid Capabilities initiatives implement Federal Acquisition Regulation (FAR)-based acquisition procedures; however, the program may also utilize DHS and CWMD-specific acquisition authorities to rapidly develop, procure and field capabilities that disrupt terrorist attempts to utilize weapons of mass destruction (WMD).

Research and Development
Budget Authority and Obligations
(Dollars in Thousands)

	FY 2021	FY 2022	FY 2023
Enacted/Request	**$65,309**	**$65,709**	**$82,515**
Carryover - Start of Year	$31,367	$42,613	$28,898
Recoveries	$3,831	-	-
Rescissions to Current Year/Budget Year	-	($351)	-
Net Sequestered Resources	-	-	-
Reprogramming/Transfers	-	$351	-
Supplementals	-	-	-
Total Budget Authority	**$100,507**	**$108,322**	**$111,413**
Collections - Reimbursable Resources	$211	-	-
Collections - Other Sources	-	-	-
Total Budget Resources	**$100,718**	**$108,322**	**$111,413**
Obligations (Actual/Estimates/Projections)	$57,966	$79,424	$59,831
Personnel: Positions and FTE			
Enacted/Request Positions	-	-	-
Enacted/Request FTE	-	-	-
Onboard and Actual FTE			
Onboard (Actual/Estimates/Projections)	-	-	-
FTE (Actual/Estimates/Projections)	-	-	-

Research and Development
Summary of Budget Changes
(Dollars in Thousands)

	Positions	FTE	Amount
FY 2021 Enacted	**-**	**-**	**$65,309**
FY 2022 President's Budget	**-**	**-**	**$65,709**
FY 2023 Base Budget	**-**	**-**	**-**
Transformational Research and Development	-	-	$37,004
Detection Capability Development	-	-	$45,511
Total Research and Development Projects	**-**	**-**	**$82,515**
FY 2023 Request	**-**	**-**	**$82,515**
FY 2022 TO FY 2023 Change	**-**	**-**	**$16,806**

Research and Development
Non Pay Budget Exhibits
Non Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
21.0 Travel and Transportation of Persons	$240	$140	$76	($64)
25.1 Advisory & Assistance Services	$14,355	$15,928	$8,718	($7,210)
25.2 Other Services from Non-Federal Sources	-	-	$6,396	$6,396
25.3 Other Purchases of goods and services	$6,275	$4,827	$7,100	$2,273
25.5 Research & Development Contracts	$36,657	$40,922	$54,291	$13,369
31.0 Equipment	-	-	$2,965	$2,965
41.0 Grants, Subsidies, and Contributions	$7,782	$3,892	$2,969	($923)
Total - Non Pay Budget Object Class	**$65,309**	**$65,709**	**$82,515**	**$16,806**

Research and Development
Research and Development Projects
Summary of Projects
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
Transformational Research and Development	$23,892	$31,378	$37,004
Technical Forensics	$7,100	$3,500	-
Detection Capability Development	$24,317	$30,831	$45,511
Rapid Capabilities	$10,000	-	-

Transformational Research and Development – PPA
Budget Comparison and Adjustments
Comparison of Budget Authority and Request
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Transformational Research and Development	$23,892	$31,378	$37,004	$5,626
Total	**$23,892**	**$31,378**	**$37,004**	**$5,626**
Subtotal Discretionary - Appropriation	$23,892	$31,378	$37,004	$5,626

PPA Level I Description

The Transformational R&D PPA covers basic and applied research and technology development (TRL 1-5) related to CBRN threat detection; countering WMD data analytics and anomaly detection; SBIR project; and FAVD.

Recurring analyses and reviews conducted by CWMD in conjunction with U.S. Government partner agencies on CBRN detection have highlighted several technical areas that provide a focus for research activities to be conducted through Transformational R&D.

This type of R&D explores innovative technologies that address gaps in U.S. counter WMD and CBRN detection capabilities. These technologies also provide improvements in performance or a reduction in cost for CBRN detection capabilities that support the CWMD mission. Work is focused on the transition of chemical/biological (chem/bio) technologies developed by interagency partners to operational capability. R&D for less mature technology components in support of the next-generation biodetection system will also occur under this project, such as anomaly detection algorithmic capabilities and alternative approaches to biodetection.

Transformational Research and Development – PPA
Budget Authority and Obligations
(Dollars in Thousands)

	FY 2021	FY 2022	FY 2023
Enacted/Request	**$23,892**	**$31,378**	**$37,004**
Carryover - Start of Year	$6,573	$11,625	-
Recoveries	$3,108	-	-
Rescissions to Current Year/Budget Year	-	-	-
Net Sequestered Resources	-	-	-
Reprogramming/Transfers	-	-	-
Supplementals	-	-	-
Total Budget Authority	**$33,573**	**$43,003**	**$37,004**
Collections - Reimbursable Resources	-	-	-
Collections - Other Sources	-	-	-
Total Budget Resources	**$33,573**	**$43,003**	**$37,004**
Obligations (Actual/Estimates/Projections)	$21,919	$43,003	$32,029
Personnel: Positions and FTE			
Enacted/Request Positions	-	-	-
Enacted/Request FTE	-	-	-
Onboard and Actual FTE			
Onboard (Actual/Estimates/Projections)	-	-	-
FTE (Actual/Estimates/Projections)	-	-	-

Transformational Research and Development – PPA
Summary of Budget Changes
(Dollars in Thousands)

	Positions	FTE	Amount
FY 2021 Enacted	-	-	**$23,892**
FY 2022 President's Budget	-	-	**$31,378**
FY 2023 Base Budget	-	-	**-**
Transformational Research and Development	-	-	$37,004
Total Research and Development Projects	-	-	**$37,004**
FY 2023 Request	-	-	**$37,004**
FY 2022 TO FY 2023 Change	-	-	**$5,626**

Transformational Research and Development – PPA
Non Pay Budget Exhibits
Non Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
21.0 Travel and Transportation of Persons	$90	$70	$71	$1
25.1 Advisory & Assistance Services	$5,205	$8,163	$2,604	($5,559)
25.3 Other Purchases of goods and services	$2,780	$2,742	-	($2,742)
25.5 Research & Development Contracts	$11,492	$16,511	$31,360	$14,849
41.0 Grants, Subsidies, and Contributions	$4,325	$3,892	$2,969	($923)
Total - Non Pay Budget Object Class	**$23,892**	**$31,378**	**$37,004**	**$5,626**

Research and Development
Research and Development Projects
Summary of Projects
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
Transformational Research and Development	$23,892	$31,378	$37,004

Transformational Research and Development
Research and Development
Technology Readiness Level Exhibit
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
Transformational Research and Development	$23,892	$31,378	$37,004

R&D Description

Funding for Transformational R&D will be used to develop innovative new detection technologies, connectivity technologies, and anomaly detection software for the purposes of strengthening DHS and U.S. Government agencies' WMD detection programs. This R&D is intended to enable new technologies to be fielded or to directly spur commercial development that strengthens the Homeland Security Enterprise.

Transformational R&D includes multiple projects. The table that follows identifies and summarizes the initiatives and funding levels for FY 2023. Details on the projects are outlined in the narrative below.

Transformational Research and Development *(Dollars in Thousands)*			
Project	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
Radiological/Nuclear (R/N) Research and Development	$7,882	$7,945	$8,136
Chemical/Biological (Chem/Bio) Research and Development	$3,000	$12,144	$12,290
Data Analytics	$10,680	$8,850	$9,025
Small Business Innovation Research (SBIR)	$2,330	$2,439	$2,553
Food, Agriculture, Veterinary Defense (FAVD)	-	-	$5,000
TOTAL	**$23,892**	**$31,378**	**$37,004**

Radiological Nuclear (R/N) Research and Development

- **Problem:** Analyses and reviews conducted by CWMD in conjunction with U.S. Government partner agencies on detection related to countering WMD have highlighted several technical areas that provide a focus for research activities to be conducted under the R/N R&D program. Furthermore, through across government consensus in framing the Nuclear Defense Research and Development Strategic Plan for Fiscal Years 2020 - 2024, several important challenges were identified to help inform agencies that enable capabilities through research and development related to R/N detection.

- **Solution:** This project enhances the Nation's ability to prevent the use of R/N weapons by developing break-through technologies that meet DHS operational requirements. The R/N Research and Development project explores innovative, high payoff, high-risk technologies that address gaps in U.S. R/N detection capabilities and provide improvements in performance or reduction in cost of R/N detection capabilities in support of the CWMD mission. Examples of technologies developed under this project include components for next generation R/N detection capabilities such as compact, high energy resolution (high isotope specificity), high sensitivity, gamma ray semiconductor materials for radioisotope identification devices (RIIDs), low cost robust ceramics, and non-fogging plastics and other materials for future radiation portal monitors (RPMs), and linear accelerators and detector materials with enhanced performance for detection of shielded Special Nuclear Material (SNM) in conveyances.

- **Justification:** Funding included in the FY 2023 Budget for this research initiative will be used to fund award vehicles such as contracts, interagency agreements, and grants with industry, academia, and national labs to support activities to develop and demonstrate breakthrough technologies that address R/N detection technical capability needs and provide cost effective, enhanced performance to counter WMD. Outputs from these research and development activities include reports and project reviews on prototype technologies as they are being developed to include outcomes from laboratory scale experiments and demonstrations, an assessment of performance against defined technical and programmatic milestones, and risks with associated mitigation strategies. Outputs also frequently include transition of technologies directly to industry, to the other divisions within CWMD such as Acquisition and Rapid Capabilities, as well as other agencies such as Defense Threat Reduction Agency (DTRA) and Department of Energy (DoE).

  Currently, activities under this project are developing technologies for future acquisitions into RIIDs, RPMs, and non-intrusive inspection (NII) systems. For RIIDs, thallium bromide (TlBr) is a high performance, high efficiency, high energy resolution (high isotope specificity) gamma ray semiconductor detector material with the potential to provide 10x lower cost than that of material typically used in commercially available RIIDs. In FY 2022, CWMD will complete the transition of the thallium bromide-based core detector module technology to the TlBr HPRDS Objective Resolution (THOR) Program under Detection Capability Development. Other activities under this R/N project seek to develop more robust gamma detectors for use in RPMs such as non-fogging variants of the standard polyvinyl toluene (PVT) plastics and garnet ceramics with improved performance. Presently, the PVT plastic gamma detectors in RPMs provide very limited specificity as to threat identification, and, in some cases, the detector materials fog due to the presence of moisture, reducing the performance capability of the RPM. CWMD is aiming to demonstrate the scalability of ceramic detector panels for use in future RPMs as well as other detector applications. Recent advances make ceramic detectors a promising high performance material type since it can be made to have high efficiency, good energy resolution, high

mechanical strength, moisture resistance, and can be fabricated rapidly at relatively low cost. Research into NII systems is focused on developing technological components of scanning systems including a compact, high pulse-rate linear accelerator, novel detectors, and nuclear data for more accurate modelling and simulations. This component development will allow for the creation of a fully integrated advanced NII system to accurately detect shielded SNM in conveyances.

Additionally, a portion of the FY 2023 Budget will be used to support initiation of new research and development into transformational technologies to meet emerging needs for R/N detection capabilities for DHS Operational Components and State and local first responders. Reserving this portion of the Budget allows new research that addresses new and emerging requirements as identified by DHS Operational Components and State and local responders to be started in a timely fashion. It also allows new research to explore emerging technologies identified by the scientific community.

- **Impact:** Completion of activities under the R/N R&D project will result in the development and demonstration of enabling prototype technologies in support of the developmental R&D programs with CWMD Acquisition or Rapid Capabilities to meet CWMD operator needs or directly spur commercial development. Some developments can transition to existing and future projects as enhancements and improvements to detection capabilities.

Type of Research
Basic, Applied

Technology Readiness Level
TRL varies between levels 1-5, with the majority in TRL 3-5 for counter WMD radiological and nuclear detection and technology development. Technologies developed under this project will undergo TRL changes as they mature through the R&D pipeline during budget years. The frequency of TRL changes will be dependent on the technology itself and the technology needs which the program is aiming to address. In general, TRL changes within the program do occur annually.

Transition Plans
Technologies developed under the R/N Research & Development project will transition to developmental R&D programs under the CWMD Acquisition Division and Rapid Capabilities Division in order to meet specific needs for DHS Component(s) or Homeland Security Enterprise customers. There is a potential for direct commercialization to industry as well. Technologies developed under this program will undergo transitions as they mature through the R&D pipeline during budget years. The frequency of transitions will be dependent on the technology itself and the need it is aiming to address. Transition typically happens at TRL 5 with a successful demonstration of the prototype technology in a relevant environment. In general, research at TRL 1-2 can take anywhere from 5-10 years to achieve TRL 5 and research in the TRL 3-4 range can take anywhere from 3-5 years to achieve TRL 5.

Project Schedule

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
FY 2021			
Complete development of thallium bromide-based core detector modules for future RIID development for transition to Thallium Bromide RIID (THOR) program.	FY 2021 Q1	FY 2022 Q1	4
Complete demonstrator unit of large ceramic panels for future RPM gamma detection.	FY 2021 Q1	FY 2022 Q4	4
Continue basic research into development and evaluation of perovskites and ceramics for x-ray radiography.	FY 2020 Q4	FY 2021 Q4	2
Continue the initiation of basic research into photo fission nuclear data for active interrogation to improve modeling capabilities.	FY 2020 Q4	FY 2021 Q4	2
Award and kick off new basic research into technology component improvements for active interrogation systems using neutrons.	FY 2021 Q3	FY 2021 Q4	2
Complete feasibility evaluation of basic research into wearable radiation detectors utilizing quantum dots.	FY 2021 Q4	FY 2022 Q1	2
FY 2022			
Complete development of thallium bromide-based core detector modules for future radioisotope identification device development for transition to thallium bromide RIID (THOR) program.	FY 2022 Q3	FY 2022 Q4	5
Complete final demonstration of Integrated Predictive Modeling Code for predicting unacceptable performance degradation of plastic gamma detector panels in RPMs and install in DAC-TER.	FY 2021 Q3	FY 2022 Q4	5
Initiate study of collocated RPMs and NII systems to optimize overall conveyance screening performance.	FY 2022 Q2	FY 2022 Q3	3
Continue basic research into development and evaluation of perovskites and ceramics for x-ray radiography and optimize materials fabricated.	FY 2022 Q1	FY 2022 Q4	2
Demonstrate novel detectors and techniques for neutron detection in a high-flux photon active interrogation environment.	FY 2022 Q2	FY 2022 Q4	4
Continue basic research into technology component improvements for active interrogation systems using neutrons.	FY 2022 Q1	FY 2022 Q4	2
Conduct feasibility studies into small sized perovskites and ceramics for x-ray radiography.	FY 2022 Q1	FY 2022 Q4	3
Continue basic research into photo fission nuclear data for active interrogation to improve modeling capabilities.	FY 2022 Q1	FY 2022 Q4	2
Continue development of a compact, high repetition-rate linear accelerator for future NII systems and demonstrate component-level capabilities.	FY 2022 Q1	FY 2022 Q2	3
Initiate basic research into high performance and cost-effective polycrystalline-based semiconductor radiation detectors.	FY 2022 Q3	FY 2022 Q4	2
Initiate new R&D to meet emerging needs for R/N detection capabilities for DHS components and SLTT partners.	FY 2022 Q3	FY 2022 Q4	3

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
FY 2023			
Continue basic research studies into scaled up perovskites and ceramics for x-ray radiography and fabricate optimized pixels and arrays.	FY 2023 Q1	FY 2023 Q4	2
Continue basic research into photo fission nuclear data for active interrogation to improve modeling capabilities.	FY 2023 Q1	FY 2023 Q4	2
Continue basic research into technology component improvements for active interrogation systems using neutrons.	FY 2023 Q1	FY 2023 Q4	2
Proof of concept demonstration of a compact, high repetition-rate linear accelerator for future NII systems.	FY 2023 Q2	FY 2023 Q3	4
Continue existing and initiate new R&D to meet emerging needs for R/N detection capabilities for DHS components and SLTT partners.	FY 2023 Q3	FY 2023 Q4	3

Chemical/Biological (Chem/Bio) Research and Development

- **Problem:** Analyses and reviews conducted by CWMD in conjunction with U.S. Government partner agencies on counter WMD detection have highlighted several technical areas that provide a focus for research activities to be conducted under the Transformational R&D program. Specifically, the need exists for advancements in innovative technologies for the detection and identification of chemical and biological agents in order to decrease the time interval between the occurrence of a presumptive attack and confirmation that it has occurred. Moreover, CWMD seeks improvements in the fidelity of detection along with a reduction in overall costs of the detection systems that support DHS components and SLTT partners.

- **Solution:** Chem/Bio R&D will focus on developing technologies that decrease the time to detect the occurrence of an attack, the fidelity of detection, and reduce the overall costs of detection systems (manpower and materials). Examples of these efforts include explorations focused on identifying and characterizing existing, as well as new and alternative signatures in detection, particularly in a 'field-forward' setting. These activities have the potential to lead to new technical solutions. The Chem/Bio R&D portfolio also explores newly developed high-risk technologies that address gaps in U.S. chem/bio detection capabilities and provide improvements in performance or reduction in cost of chem/bio detection capabilities in support of the CWMD mission.

- **Justification:** Funding included in the FY 2023 Budget for these research initiatives will be used to support activities that develop and demonstrate breakthrough technologies that address chem/bio detection technical capability needs and provide cost effective and enhanced performance to DHS Operational Components and State and local first responders. This will be accomplished through vehicles such as contracts, interagency agreements, and grants with industry, academia, and national laboratories. Outputs from these research and development activities include reports and project reviews on the technologies as they are being developed, outcomes from laboratory scale experiments and demonstrations, an assessment of technology performance against defined technical and programmatic milestones, and analysis of risks with associated mitigation strategies.

  The R&D supported by this funding will strengthen the Nation's ability to protect against biological and chemical weapons of mass destruction by improving existing capabilities and developing new capabilities for DHS Operational Components and State and local first responders. The increased funding would enable CWMD to pursue R&D efforts to develop essential capabilities to improve detection of chemical and biological threats. Examples of such areas include: automated approaches to sample collection and identification for biothreats; support for Biological Detection for the 21st Century (BD21) through improved sensors expanding the detection range of bioagents and increasing specificity/sensitivity; next generation genetic sequencing of samples for biothreat detection; non-intrusive inspection approaches for detecting bulk chemical threats in conveyances; development of prototype technologies for standoff trace chemical detection for applications such as parcel screening; and addressing technology gaps identified by the Transportation Security Administration. The increase in funding will allow for multiple project awards studying different technological approaches. The ability to study multiple approaches will increase the probability of success. Not pursuing such R&D would diminish the Nation's capability to provide early detection and prevention of chemical or biological threats before they impact the Nation's health and/or economic security.

Additionally, a portion of the FY 2023 Budget will be used to support initiation of research and development into transformational technologies to meet emerging needs for chem/bio detection capabilities for DHS Operational Components and State and local first responders.

- **Impact:** Completion of activities under the Chem/Bio Research & Development project will result in the development and demonstration of enabling prototype technologies in support of the developmental R&D programs with CWMD Acquisitions or Rapid Capabilities to meet CWMD operator needs or directly spur commercial development.

Type of Research
Basic, Applied

Technology Readiness Level
The TRL varies between levels 1-5, with the majority in TRL 3-5 for counter WMD chemical and biological detection and technology development. This research also includes a review of chem/bio detection technologies developed by government and industry partners and transition of developments from lower TRL (concepts, hardware components and or prototypes) stages to higher TRL products.

Transition Plans
Technologies developed under the Chem/Bio Research & Development project will transition to developmental R&D programs under the CWMD Acquisition Division and Rapid Capabilities Division to meet specific needs for DHS Component(s) or Homeland Security Enterprise customers. There is a potential for commercialization, as well. Technologies developed under this program will undergo transitions as they mature through the R&D pipeline during budget years. The frequency of transitions will be dependent on the technology itself and the need it is aiming to address. Transition typically happens at TRL 5 with a successful demonstration of the prototype technology in a relevant environment. In general, research at TRL 1-2 can take anywhere from 5-10 years to achieve TRL 5 and research in the TRL 3-4 range can take anywhere from 3-5 years to achieve TRL 5.

Project Schedule

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
FY 2021			
Conduct feasibility evaluation and continue development of chemical standoff detection for parcel screening.	FY 2020 Q4	FY 2021 Q4	5
Conduct feasibility evaluation and continue development of handheld chem/bio standoff detection.	FY 2020 Q4	FY 2021 Q4	5
Continue research activities that address current and emerging chemical threats to aviation security.	FY 2020 Q4	FY 2021 Q4	4

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
Continue basic research for fluid-based biodetection capabilities.	FY 2021 Q1	FY 2021 Q4	2
Continue basic research for alternative signatures for biodetection.	FY 2021 Q1	FY 2021 Q4	2
Award and kick off new R&D into microRNA as a tool for early detection of biothreats.	FY 2021 Q3	FY 2021 Q4	3
Complete R&D to meet emerging needs for Shielded Threat Detection of Narcotics.	FY 2020 Q4	FY 2021 Q1	5
Initiate new R&D to meet emerging needs for Shielded Threat Detection of Explosives	FY 2020 Q2	FY 2021 Q4	4
FY 2022			
Complete demonstration of chemical standoff detection for parcel screening.	FY 2022 Q1	FY 2022 Q3	6
Conduct demonstration of handheld chem/bio standoff detection.	FY 2022 Q1	FY 2022 Q4	5
Continue research activities that address current and emerging chemical threats to aviation security.	FY 2022 Q1	FY 2022 Q4	5
Continue basic research for fluid-based biodetection capabilities.	FY 2022 Q1	FY 2022 Q4	2
Continue basic research for alternative signatures for biodetection.	FY 2022 Q1	FY 2022 Q4	2
Continue existing and initiate new research & development to meet emerging needs for chem/bio detection capabilities for DHS Operational Components and State and local first responders.	FY 2022 Q1	FY 2022 Q4	3
Complete R&D and demonstration on emerging needs for Shielded Threat Detection of Explosives	FY 2022 Q1	FY 2022 Q4	4
FY 2023			
Continue research activities that address current and emerging chemical threats to aviation security.	FY 2023 Q1	FY 2023 Q4	5
Continue basic research for fluid-based biodetection capabilities.	FY 2023 Q1	FY 2023 Q4	2
Continue basic research for alternative signatures for biodetection.	FY 2023 Q1	FY 2023 Q4	2
Continue basic research in chemical/biological R&D in areas such as Indicator Materials for Chemical Threat Sensing, Wastewater Surveillance for Biological and Chemical Threats, and Host-Pathogen Response Pattern Investigations.	FY 2023 Q1	FY 2023 Q4	2
Continue R&D for the improvement and further development of biosensors.	FY 2023 Q1	FY 2023 Q3	5
Award and kick off new R&D for Standoff Wide Area Remote Monitoring Systems for chemical detection.	FY 2023 Q3	FY 2023 Q4	4
Continue existing and initiate new research & development to meet emerging needs for chem/bio detection capabilities for DHS Operational Components and State and local first responders.	FY 2023 Q1	FY 2023 Q4	3

Data Analytics
- **Problem:** Data analytics, including network capabilities, is an essential component of research at CWMD, cutting across a wide range of CWMD activities. CBRN threat detection cannot rely solely on the capabilities of single detectors. As in many spheres, it is apparent in CBRN that the synthesis of data from a diverse network of complex sensors, situational awareness across wide geographical and informatic spaces, and built-in fault tolerance must underly any strategy for national, and even global, threat awareness. The special challenges in CBRN are that the threats are generally rare, detections must be reliable and traceable, and that the time-to-detection must be as short as possible. Meeting these challenges requires mission-targeted investment in artificial intelligence/machine learning (AI/ML) technology development.
- **Solution:** Within the Data Analytics project, there are a number of R&D initiatives focused on technologies that (a) integrate physical sensor data with other information streams (e.g., non-physical contextual data), (b) identify patterns, and (c) identify anomalies in fused data streams. These efforts have included studies of multimodal data fusion on networked detectors, threat detection in radiography, and improving operational performance of an ageing but very much serviceable radiation portal monitors using ML (Enhanced Radiological Nuclear Inspection and Evaluation (ERNIE) under the Detection Capability Development). They also include the development of an Anomaly Detection Algorithm (ADA), which is to be a key component in the Biological Detection for the 21st Century (BD21), among others. These activities will support targeting and interdiction by domestic and global partners, to improve capabilities and for the prevention of WMD terrorism. The research activities to meet this challenge support the Transformational R&D Program.
- **Justification:** Funding included in the FY 2023 Budget for this research initiative will be used to develop breakthrough computational technologies in ML, AI, and other advanced algorithms to enhance the capabilities of DHS Operational Components and State and local first responders to prevent WMD terrorism. Pursuing R&D in applying ML, AI, and/or advanced algorithms to data streams from CBRN sensors and other contextual information improves the likelihood of discovering threats. Not pursuing such R&D would mean missing the potential benefits to Homeland Security from modern data analytics.

- **Impact:** Completion of activities under the Data Analytics project will result in the development and demonstration of enabling prototype technologies in support of the developmental R&D programs with CWMD Acquisitions or Rapid Capabilities, programs in CWMD Information and Analysis Directorate, or directly spur commercial development.

Type of Research
Basic, Applied

Technology Readiness Level
The TRL varies between levels 1-5, with the majority in TRL 3-5 for counter WMD detection and technology development. Technologies developed under this project will undergo TRL changes as they mature through the R&D pipeline during budget years. The frequency of TRL changes will be dependent on the technology itself and the needs of the technology which the project aims to address. In general, TRL changes within the program do occur annually.

Transition Plans

Technologies developed under the Data Analytics project will transition to developmental R&D programs under the CWMD Acquisition Division and Rapid Capabilities Division or programs in the CWMD Information and Analysis Directorate to meet specific needs for DHS Component(s) or Homeland Security Enterprise customers. There is a potential for commercialization as well. Technologies developed under this program will undergo transitions as they mature through the R&D pipeline during budget years. The frequency of transitions will be dependent on the technology itself and the need it is aiming to address.

Project Schedule

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
FY 2021			
Complete demonstration of anomaly detection algorithms utilizing physical and non-physical sensor information.	FY 2020 Q3	FY 2021 Q1	4
Conduct demonstration of initial software version for automated machine learning algorithm for predictive maintenance of RPM's.	FY 2020 Q2	FY 2021 Q4	3
Complete initial demonstration of spectral compression algorithmic approach for network sensors.	FY 2020 Q2	FY 2021 Q4	4
Initiate basic R&D into CBRN wide area sensor approaches.	FY 2021 Q3	FY 2021 Q4	2
FY 2022			
Complete Proof of Concept testing of spectral compression algorithm for networked sensors.	FY 2021 Q4	FY 2022 Q2	4
Continue development leading to performance evaluation at a port of automated machine learning algorithm for predictive maintenance of RPM's.	FY 2021 Q4	FY 2022 Q4	5
Execute final year of the research efforts into radiological anomaly detection enhancement and radiological environmental background characterization.	FY 2022 Q3	FY 2022 Q4	4
Continue basic research into CBRN wide area sensor approaches.	FY 2022 Q1	FY 2022 Q4	3
Initiate new R&D to meet emerging needs for data analytics capabilities for DHS Operational Components and State and local first responders.	FY 2022 Q3	FY 2022 Q4	3
FY 2023			
Initiate program for algorithm/network support for individual chemical sensors.	FY 2023 Q1	FY 2024 Q4	4
Initiate program to study static vs. dynamic sensor deployments.	FY 2023 Q1	FY 2024 Q4	3
Initiate BD21 anomaly detection algorithm development version for an array of sensor nodes to include current BD21 sensors and new enhanced sensor modalities.	FY 2023 Q1	FY2023 Q4	5
Initiate programs to develop a broad-area sensing array approach for CBRN threat detection and tracking before, during, and after a high-profile event.	FY 2023 Q2	FY 2023 Q4	3

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
Initiate sensor exploitation work for automated threat detection in coordination with CBP.	FY 2023 Q1	FY 2023 Q4	4
Initiate in-house R&D capability environment work concerning data cleaning and distribution, algorithm testbed, and AI/ML to expand data sharing by sanitizing operational datasets activities.	FY 2023 Q3	FY 2023 Q4	4
Initiate data fusion/enhanced analytics work for analyzing genomic sequencing data to address agent agnostic detection.	FY 2023 Q1	FY 2023 Q4	3
Continue basic research into CBRN wide area sensor approaches.	FY 2023 Q1	FY 2023 Q4	3
Continue existing and initiate new R&D to meet emerging needs for data analytics capabilities for DHS Operational Components and State and local first responders.	FY 2023 Q3	FY 2023 Q4	3

Small Business Innovation Research (SBIR)

- **Problem:** Analyses and reviews conducted by CWMD in conjunction with U.S. Government partner agencies on counter WMD detection have highlighted several technical areas that provide a focus for research activities to be conducted under the Transformational R&D program to enable detection of a WMD. Specifically, there exists a need for greater innovation in CBRN detection, and data analytics capabilities to support DHS Operational Components and State and local first responders to enable detection of indicators of a WMD as early as possible.

- **Solution:** Small businesses capable of conducting research and development in homeland security-related areas can provide unique capabilities and expertise that could address these needs by stimulating high-tech innovation in the United States while looking for an incentive to profit from commercialization. The near term solutions are opportunities for small businesses to harness leading edge technologies applicable to homeland security. The SBIR program enables technological innovation by strengthening the role of small businesses in federally funded R&D. The CWMD SBIR project is specifically focused on meeting Federal Research and Development needs aimed at CBRN detection and FAVD for countering WMD. The R&D needs include technological approaches that address gaps in the larger framework for CBRN detection and FAVD capabilities, significantly improve the performance of detection methods, components, and systems, and/or significantly reduce the operational burden of using these technologies.

- **Justification:** Funding included in the FY 2023 Budget for this research initiative will support SBIR Phase I and Phase II activities that enable small businesses to develop and demonstrate technologies that address counter WMD technical capability needs, ultimately allowing the CWMD SBIR program to encompass a wider breadth of activities across the CBRN detection and FAVD spectrum. Outputs from these research and development activities include reports and project reviews on the technologies as they are being developed to include outcomes from laboratory scale experiments and demonstrations, an assessment of technology performance against defined technical and programmatic milestones, and risks with associated mitigation strategies.

- **Impact:** Completion of this project will stimulate technological innovation by strengthening the role of innovative small businesses in federally funded R&D to meet CWMD operator needs. SBIR programs transition near-term solutions, supporting identified capability gaps, into commercial products or services.

Type of Research
Applied, Developmental

Technology Readiness Level
SBIR includes applied and developmental R&D, depending on the phase of the contract. SBIR Phase I and Phase II projects are aimed at applied R&D, with a Phase I ending at TRL 3-4 and a Phase II ending at a TRL 5. SBIR Phase III projects are for developmental R&D at TRL 6-7.

Transition Plans

The primary objective of the SBIR program, at the whole-of-government level, is for new innovative products to reach the consumer market towards one or more identified end users – i.e., "commercialization." The CWMD SBIR program also seeks projects which can meet R&D needs identified by operational end-users and subject matter experts, as well as the development of components which can be integrated into larger development R&D projects or utilized by Rapid Capabilities and/or Acquisition. Aspects of the technologies developed under SBIR will support and can further augment technologies of all other R&D programs within CWMD.

Project Schedule

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
FY 2021			
Training toolkit for radiological/nuclear/chemical Phase III development and delivery of toolkits for demonstrations with operators.	FY 2021 Q1	FY 2022 Q3	6
Sensor Fusion Phase II video management system architecture data collection campaign, demonstration and final report.	FY 2021 Q3	FY 2022 Q1	5
Unmanned Aerial System Phase II sensor integration build-out, and midphase review.	FY 2020 Q4	FY 2021 Q4	4
Ground Based Robotic Inspection Phase II autonomous system build, planning demonstration, and mid-phase report.	FY 2020 Q4	FY 2021 Q1	5
Networked sensors Phase II network demonstration with sensor integration build-out, and midphase review.	FY 2021 Q3	FY 2021 Q4	4
Fieldable Multiplex Detection Biothreats Phase I award and kickoff.	FY 2021 Q3	FY 2021 Q3	3
Training toolkit for radiological/nuclear/chemical Phase III midphase review and report.	FY 2021 Q4	FY 2021 Q4	5
Large volume composite scintillators SBIR Phase III award and kickoff.	FY 2021 Q4	FY 2022 Q1	6
FY 2022			
Fieldable Multiplex Detection Biothreats Phase I Final Review and Final Report.	FY 2022 Q1	FY 2022 Q1	3
Fieldable Multiplex Detection of Biothreated Phase II award and kickoff.	FY 2022 Q2	FY 2022 Q3	3
Sensor Fusion Phase II video management system architecture data collection campaign, demonstration and final report.	FY 2022 Q1	FY 2022 Q2	5
Networked sensors Phase II adaptable sensor network management infrastructure demonstration and final report.	FY 2022 Q3	FY 2022 Q4	5
Complete Unmanned Aerial System Phase II development and final report.	FY 2021 Q4	FY 2022 Q4	5
Complete Ground Based Robotic Inspection Phase II autonomous system demonstration and final report.	FY 2021 Q4	FY 2022 Q1	5

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
Training toolkit for radiological/nuclear/chemical Phase III final demonstration, equipment builds, report, and review.	FY 2022 Q4	FY 2022 Q4	6
Large volume composite scintillators SBIR Phase III award and kickoff.	FY 2022 Q4	FY 2023 Q1	6
Initiate up to eight SBIR Phase I projects of research capable of meeting DHS component CWMD mission needs in the areas of Next Generation Semiconductor-Based Spectroscopic Personal Radiation Detectors (SPRDs), Field Forward Diagnostics for Select Agent List Toxins, Wearable Detector for Aerosolized Chemical Threats, and From Port-Side to Pen-Side: Low Cost Detection/Diagnostics for High-Consequence Transboundary or Nationally Reportable Animal Diseases, Particularly Those with Zoonotic Propensity.	FY 2022 Q3	FY 2022 Q3	3
Initiate up to three SBIR Phase II projects for Fieldable Multiplex Detection of Biothreats.	FY 2022 Q2	FY 2022 Q3	4
Initiate up to one SBIR Phase III project capable of meeting DHS component CWMD mission needs.	FY 2022 Q2	FY 2022 Q4	5
FY 2023			
Fieldable Multiplex Detection of Biothreats Phase II demonstrate initial prototype bio detector, develop multiplex panel for biothreats, characterize results and midphase review.	FY 2023 Q2	FY 2023 Q3	4
Large volume composite scintillators SBIR Phase III modeling analysis, prototype design, small detector build, and mid-phase review.	FY 2023 Q4	FY 2023 Q4	6
Initiate up to five SBIR Phase I projects capable of meeting DHS component CWMD mission needs.	FY 2023 Q3	FY 2023 Q3	3
Initiate up to five SBIR Phase II projects from Phase I projects initiated in FY 2022 capable of meeting DHS component CWMD mission needs.	FY 2023 Q2	FY 2023 Q3	4
Initiate up to three SBIR Phase III projects capable of meeting DHS component CWMD mission needs.	FY 2023 Q2	FY 2023 Q4	6

Food, Agriculture, Veterinary Defense (FAVD)

- **Problem:** The Securing our Agriculture and Food Act of 2018 (SAFA, PL 115-43) and Homeland Security Presidential Directive 9 (HSPD-9) require DHS to coordinate efforts related to defending the food, agricultural, and veterinary (FAV) systems of the United States against terrorism and other high-consequence events. Analyses and reviews conducted by the DHS Chief Medical Officer in conjunction with U.S. Government partner agencies on the existing and emerging threats to the FAVD systems highlighted several technical areas for research under the Transformational R&D program. These analyses identified the need to improve the detection, characterization, forecasting, and prevention of, and the mitigation, protection, response, and recovery from high-consequence agents in the agricultural, food, and water supply chains and/or interdependent systems.

- **Solution:** FAVD R&D will accelerate and expand the development of current and new countermeasures against threats to domestic and non-domestic populations of animals and plants, whether they originate from the natural, intentional, or unintentional introduction of an etiologic agent, or from the chemical, biological, nuclear, or radiological adulteration of the agricultural, food, and water supply chains. Special emphasis will be placed on developing 'field forward' or 'pen-side' diagnostics for various threat agents, as well as vaccines, sensors, screening tools, modeling, therapeutics, or methodologies which may be deployed to protect critical nodes of the food and agriculture sector. This will include activities focused on creating new countermeasures for high-consequence emerging and transboundary animal diseases, such as African Swine Fever (ASF), an animal disease effecting pigs that, if introduced to the United States, would have a catastrophic impact to the Nation's agriculture and food supply. CWMD will coordinate with the DHS Office of Health Security and Resilience (OHSR) and S&T (as guided by the DHS R&D Joint Strategy for FAVD R&D), as well as USDA and other partner agencies, to prioritize these efforts.

Justification:
- Funding included in the FY 2023 Budget will be used to initiate countermeasure development to prevent or reduce an unwanted outcome or cascading consequences from a probable incident or event. A portion of the funding will be used to support priority efforts to develop countermeasures for ASF. The funding will also enable CWMD to begin pursuing R&D efforts to develop diagnostics, devices, sensors, screening tools, and other methodologies that foster deterrence, prevention, detection, mitigation, and recovery from high-consequence incidents of other food, agriculture and veterinary (FAV) threats, including those impacting critical nodes of FAV systems. The DHS Office of Health Security & Resilience (OHSR) also provides requirements for and coordinates with the Office for Countering Weapons of Mass Destruction on projects related to FAV-D research and development.

- **Impact:** Completion of activities under the FAVD R&D project will result in the development and demonstration of prototype technologies and countermeasures related to R&D programs, including countermeasure development for ASF, that support OHSR efforts, meet DHS operator and Federal partner needs, and/or directly spur commercial development. For example, inexpensive, rapid field-forward diagnostics for high impact/consequence animal diseases would help secure the Nation's food supply. Similarly, investments into other applied and basic research involving countermeasure development, modeling, and artificial intelligence for domestic animals and plants would increase the resiliency of U.S. agricultural, food, and water supply chains.

Type of Research
Basic and Applied

Technology Readiness Level
The TRL varies between levels 1-5, with the majority in TRL 3-5 for health security-related R&D. Technologies developed under this project will undergo TRL changes as they mature through the R&D pipeline during budget years. The frequency of TRL changes will be dependent on the technology itself and the needs of the technology which the project aims to address. In general, TRL changes within the program occur annually. CWMD will also explore repurposing or adaptation of existing technologies with high TRLs (7-9 for their designed purpose) through technology maturation and risk reduction (TMRR) strategies to reach a technology transfer point significantly faster than newly developed technology.

Transition Plans
Technologies developed under the FAVD R&D project will transition to developmental R&D programs to meet specific needs for DHS Component(s) or Homeland Security Enterprise customers. Technologies developed under this program will undergo transitions as they mature through the R&D pipeline during budget years. The frequency of transitions will be dependent on the technology itself and the need it is aiming to address. Transition typically happens at TRL 5 with a successful demonstration of the prototype technology in a relevant environment. In general, research at TRL 1-2 can take between 5-10 years to achieve TRL 5, and research in the TRL 3-4 range can take between 3-5 years to achieve TRL 5.

Project Schedule

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
		FY 2023	
Initiate new R&D to meet emerging needs for FAVD capabilities for DHS operational components and Federal partners, including activities focused on creating new countermeasures for African Swine Fever (ASF).	FY 2023 Q2	FY 2023 Q4	3

Technical Forensics – PPA
Budget Comparison and Adjustments
Comparison of Budget Authority and Request
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Technical Forensics	$7,100	$3,500	-	($3,500)
Total	**$7,100**	**$3,500**	**-**	**($3,500)**
Subtotal Discretionary - Appropriation	$7,100	$3,500	-	($3,500)

PPA Level I Description

The Technical Forensics program advances the U.S. Government's technical capability to rapidly, accurately, and credibly characterize and identify the nature, origin, and history of nuclear materials interdicted before a detonation. In January 2021, with the signing of National Security Presidential Memorandum (NSPM) 35, all research and development related to pre-detonation nuclear materials was transitioned from CWMD to the National Nuclear Security Administration (NNSA). CWMD continues to support the National Nuclear Forensics Expertise Development program that addresses the enduring challenge of sustaining a preeminent workforce of scientists and policymakers that are educated and trained in nuclear forensics-related specialties by funding research projects.

Technical Forensics – PPA
Budget Authority and Obligations
(Dollars in Thousands)

	FY 2021	FY 2022	FY 2023
Enacted/Request	**$7,100**	**$3,500**	-
Carryover - Start of Year	$4,347	$3,597	$4,587
Recoveries	$31	-	-
Rescissions to Current Year/Budget Year	-	-	-
Net Sequestered Resources	-	-	-
Reprogramming/Transfers	-	-	-
Supplementals	-	-	-
Total Budget Authority	**$11,478**	**$7,097**	**$4,587**
Collections - Reimbursable Resources	-	-	-
Collections - Other Sources	-	-	-
Total Budget Resources	**$11,478**	**$7,097**	**$4,587**
Obligations (Actual/Estimates/Projections)	$7,881	$2,510	$4,587
Personnel: Positions and FTE			
Enacted/Request Positions	-	-	-
Enacted/Request FTE	-	-	-
Onboard and Actual FTE			
Onboard (Actual/Estimates/Projections)	-	-	-
FTE (Actual/Estimates/Projections)	-	-	-

Technical Forensics – PPA
Summary of Budget Changes
(Dollars in Thousands)

	Positions	FTE	Amount
FY 2021 Enacted	-	-	$7,100
FY 2022 President's Budget	-	-	$3,500
FY 2023 Base Budget	-	-	-
FY 2023 Request	-	-	-
FY 2022 TO FY 2023 Change	-	-	($3,500)

Technical Forensics – PPA
Non Pay Budget Exhibits
Non Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Technical Forensics	$7,100	$3,500	-	($3,500)
Total	**$7,100**	**$3,500**	**-**	**($3,500)**
Subtotal Discretionary - Appropriation	$7,100	$3,500	-	($3,500)

Research and Development
Research and Development Projects
Summary of Projects
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
Technical Forensics	$7,100	$3,500	-

Technical Forensics
Research and Development
Technology Readiness Level Exhibit
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
Technical Forensics	$7,100	$3,500	-

R&D Project Description

The Technical Forensics program advances the U.S. Government's technical capability to rapidly, accurately, and credibly characterize and identify the nature, origin, and history of nuclear materials interdicted before a detonation. The National Nuclear Forensics Expertise Development Program (NNFEDP) is a comprehensive effort designed to provide a stable foundation focused on developing and maintaining the nuclear forensics workforce that support Technical Forensics R&D and operations,

- **Problem:** There is a need to assess, identify, develop, demonstrate, and operationalize scientific and technological approaches that address gaps in the Nuclear Forensics and Attribution Capabilities of the United States. Furthermore, there is a need to continuously improve the speed, quality, and confidence of pre-detonation bulk material Nuclear Forensics methodologies. Current technical Nuclear Forensics activities leverage the shrinking nuclear weapons complex through utilization of expertise and existing equipment, which has been in decline since the end of the Cold War with nuclear scientists leaving the field for other pursuits.

- **Solution:** The Technical Forensics project explores innovative, low-risk, later-stage technologies and methodologies to develop technologies and methodologies that:
  o Address capability gaps and weaknesses found in the National Strategic Five-Year Plan for Improving the Nuclear Forensics and Attribution Capabilities of the United States;
  o Develop pre-detonation material nuclear forensics signatures to determine material and statistical population characteristics that can uniquely identify linkages with known or predicted material characteristics; and
  o Provide long term and continued investment to promote education and training within academia, the national and defense laboratories that perform nuclear forensics research, and the Federal workforce.

- **Justification:** No funding is included in the FY 2023 Budget for this research initiative. Under the Countering Weapons of Mass Destruction Act (P.L. 115-387), CWMD is responsible for establishing and maintaining a National Nuclear Forensics Expertise Development Program. CWMD will meet this requirement through the sponsorship of postdoctoral fellowships, and graduate student support to R&D through new Nuclear Forensics Research Awards using carryover funding. Previously CWMD maintained responsibilities under Presidential Policy Directive (PPD)-

42 Annex C (September 2016) to perform pre-detonation materials nuclear forensics R&D. NSPM 35, signed on January 21, 2021 realigns those responsibilities under the Department of Energy (DOE)/National Nuclear Security Administration (NNSA). CWMD plans to carryover FY 2022 funding to FY 2023 to address this mandate.

- **Impact:** DHS CWMD's expertise development program maintains the pipeline of technical professionals at the national laboratories supporting technical nuclear forensics. Capabilities developed under Technical Forensics continuously improve the United States Government pre-detonation materials nuclear forensics operational capability. These improvements allow experts to reach technical conclusions about interdicted material based on known signatures, comparative samples of materials, and modeling of manufacturing processes to support attribution assessments for decision makers.

Type of Research
Basic, Applied, Developmental

Technology Readiness Level
This project includes TRLs 1-7. The project maintains the technical expertise required to execute the Nation's Nuclear Forensics mission through interdisciplinary R&D collaboration among students, academic departments, universities, and national laboratories.

Transition Plans
Capabilities developed under this program will transition to the DOE National Laboratories that are responsible for the operational technical nuclear forensics mission. Students trained under the expertise development program will likely obtain employment either at a National Laboratory or a Federal agency responsible for nuclear forensics.

Project Schedule

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
FY 2021			
Expertise Development- Sponsorship of postdoctoral fellows, undergraduate and graduate students and mentors aligned with technical nuclear forensics focus areas.	FY 2021 Q4	FY 2022 Q4	7
FY 2022			
Expertise Development- Sponsorship of postdoctoral fellows, undergraduate and graduate students and mentors aligned with technical nuclear forensics focus areas.	FY 2022 Q4	FY 2023 Q1	7
FY 2023			
Expertise Development- Sponsorship of postdoctoral fellows, undergraduate and graduate students and mentors aligned with technical nuclear forensics focus areas.	FY 2023 Q4	FY 2024 Q1	7

Detection Capability Development – PPA

Budget Comparison and Adjustments
Comparison of Budget Authority and Request
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Detection Capability Development	$24,317	$30,831	$45,511	$14,680
Total	**$24,317**	**$30,831**	**$45,511**	**$14,680**
Subtotal Discretionary - Appropriation	$24,317	$30,831	$45,511	$14,680

PPA Level I Description

The Detection Capability Development program supports R&D projects anticipated to lead to a materiel solution. Capability gaps exist across multiple pathways through which WMD can be transported. These capability gaps can to some degree be mitigated with non-materiel solutions but primarily require a materiel solution to be developed, acquired, and deployed to address the gap. DHS operational users and CWMD recognize many deployed systems will be reaching their respective end-of-life and modernization and/or recapitalization efforts will be required to maintain or improve CWMD sensor capabilities. Additionally, potential Commercial off the Shelf (COTS) material solutions may require customization and will always require test and evaluation to ensure they meet operational and functional requirements.

Through analyses of alternatives, threat assessments, preparation of documentation to prepare for materiel solution acquisition, evaluation of proposed materiel solutions, and test and evaluation activities, CWMD can conduct the capability development effort necessary to acquire and deploy materiel solutions. CWMD acquisition activities adhere to the Department's Integrated Lifecycle Management approach to develop, acquire, procure, deploy and sustain chemical, biological, radiological and nuclear detection systems for customers that operate the systems in the field. Throughout the life of each Detection Capability Development, CWMD works collaboratively with the DHS Operational Components and with State and local agencies to manage the equipment configuration to ensure it continues to meet its operational requirements, as well as collect and analyze operational performance and maintenance data to maximize performance per maintenance dollar and inform future procurement requirements.

Detection Capability Development – PPA
Budget Authority and Obligations
(Dollars in Thousands)

	FY 2021	FY 2022	FY 2023
Enacted/Request	**$24,317**	**$30,831**	**$45,511**
Carryover - Start of Year	$18,486	$21,537	$24,311
Recoveries	$645	-	-
Rescissions to Current Year/Budget Year	-	-	-
Net Sequestered Resources	-	-	-
Reprogramming/Transfers	-	-	-
Supplementals	-	-	-
Total Budget Authority	**$43,448**	**$52,368**	**$69,822**
Collections - Reimbursable Resources	$61	-	-
Collections - Other Sources	-	-	-
Total Budget Resources	**$43,509**	**$52,368**	**$69,822**
Obligations (Actual/Estimates/Projections)	$21,909	$28,057	$23,215
Personnel: Positions and FTE			
Enacted/Request Positions	-	-	-
Enacted/Request FTE	-	-	-
Onboard and Actual FTE			
Onboard (Actual/Estimates/Projections)	-	-	-
FTE (Actual/Estimates/Projections)	-	-	-

Detection Capability Development – PPA
Summary of Budget Changes
(Dollars in Thousands)

	Positions	FTE	Amount
FY 2021 Enacted	-	-	**$24,317**
FY 2022 President's Budget	-	-	**$30,831**
FY 2023 Base Budget	-	-	**-**
Detection Capability Development	-	-	$45,511
Total Research and Development Projects	-	-	**$45,511**
FY 2023 Request	-	-	**$45,511**
FY 2022 TO FY 2023 Change	-	-	**$14,680**

Detection Capability Development – PPA
Non Pay Budget Exhibits
Non Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
21.0 Travel and Transportation of Persons	$75	$60	$5	($55)
25.1 Advisory & Assistance Services	$6,725	$6,979	$6,114	($865)
25.2 Other Services from Non-Federal Sources	-	-	$6,396	$6,396
25.3 Other Purchases of goods and services	$2,050	$2,085	$7,100	$5,015
25.5 Research & Development Contracts	$15,467	$21,707	$22,931	$1,224
31.0 Equipment	-	-	$2,965	$2,965
Total - Non Pay Budget Object Class	**$24,317**	**$30,831**	**$45,511**	**$14,680**

Research and Development
Research and Development Projects
Summary of Projects
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
Detection Capability Development	$24,317	$30,831	$45,511

Detection Capability Development
Research and Development
Technology Readiness Level Exhibit
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
Detection Capability Development	$24,317	$30,831	$45,511

R&D Project Description

The capability development activities funded with this program will support acquisition and deployment of counter WMD devices that will partially or wholly address capability gaps and provide DHS operational users and other Federal users with commercially available or next-generation counter WMD devices. This R&D is intended to enable new technologies to be fielded or to directly spur commercial development that strengthens the Homeland Security Enterprise.

The Detection Capability Development R&D program includes multiple projects. The table that follows identifies and summarizes the initiatives and funding levels for FY 2023. Details on the projects are outlined in the narrative below.

Detection Capability Development *(Dollars in Thousands)*			
Project	**FY 2021 Enacted**	**FY 2022 President's Budget**	**FY 2023 President's Budget**
Biological Detection for the 21st Century (BD21)	$3,500	$9,654	$17,004
CWMD Information Architecture(IA)/GATE-U	$10,000	$2,000	$2,032
Advanced Technology Demonstration/Rapid Prototyping	-	$4,065	$4,065
TIBr HPRDS Objective Resolution (THOR)	$1,000	$1,000	$1,000
CWMD Sensor Integration	-	$1,000	$1,000
Mobile Active Interrogation Using Neutrons (MAIN)	$611	$1,500	$500
Next Generation Mobile System	$4,156	$3,500	-
Radiation Portal Monitor (RPM) Recapitalization (RAPTER)	$5,050	$8,112	$19,910
TOTAL	**$24,317**	**$30,831**	**$45,511**

Biological Detection for the 21ˢᵗ Century (BD21)

- **Problem:** The existing bio-detection capability has several capability gaps validated by DHS, the most significant being a prolonged event-to-detection timeline. The current capability is not postured to address threats in indoor environments in ways that match anticipated threat vectors, and it does not provide a common operating picture. The goal for biodetection, as stated in the 2019 Mission Needs Statement for Biological Detection, is to achieve near real-time anomaly detection and provide an alert to responders. The BioWatch capability requires a shorter timeline to detection to elicit a more effective emergency management, medical, and public health response to mitigate the effects of a biological incident.

- **Solution:** Recognizing opportunities for improvements in the current U.S. system that monitors for biological attack, CWMD is leading an effort to develop the next-generation biodetection system. The BD21 program of record is working to design, develop, and deploy networked detection systems that continuously monitor the air, collect real-time data, and employ data analytics to detect anomalies. The faster anomalies are detected, the faster first responders can address potential threats. BD21 efforts are tightly integrated with the Anomaly Detection Algorithm development efforts funded by Transformational R&D PPA. DHS Science and Technology Directorate (S&T) plays an integral role in the development of BD21 through membership on integrated product teams (IPTs), through the CWMD Alliance (a collaborative partnership between S&T, CWMD, and the Department of Defense Joint Program Executive Office for Chemical, Biological, Radiological, and Nuclear Defense), and through execution of several supporting bio-detection projects. S&T oversees several technical reviews to approve the Test and Evaluation Strategy, assess the technical risks to the program, and evaluate the program's technical progress to ensure that the program remains on track to meet its stated goals.

- **Justification:** BD21 will advance the existing biological detection capability provided by BioWatch, by developing a new capability that will provide continuous monitoring for airborne biological agent releases using anomaly detection sensors and data analytics, provide timely notification to first responders of a potential release using common operating picture technology, and interface with portable on-site field screening equipment to test collected samples. BD21 will enable first responders and State and local public health officials to take quick actions that minimize the impact of a biological release.

  FY 2023 funding for this research initiative will be used to develop, test, and evaluate the preferred BD21 capability alternative to obtain the capability and approvals for the production and deployment of BD21. FY 2023 funding will support development, system engineering reviews (Integration Readiness Review, Test Readiness Review), Developmental Test and Evaluation activities, and completion of the resulting test reports. FY 2023 funding will be used to conduct integrated indoor/outdoor proof of concept demonstration activities to support updates to the BD21 Technology Readiness Assessment (TRA) for the full system concept.

- **Impact:** Completion of this project will inform decision-making regarding the progression to subsequent phases of the acquisition life cycle. Test and evaluation activities will confirm solutions are both effective and affordable over the life of their deployment. This will result in more effective acquisition decision-making by CWMD. BD21 deployment will provide a networked detection solution that continuously monitors the

air, collects real-time data, and employs data analytics to detect anomalies. The faster anomalies are detected, the faster first responders can address potential threats.

Type of Research
Development

Technology Readiness Level
In the current acquisition phase, the program is performing TRAs on the BD21 Critical Technology Elements (CTE). Several of the BD21 CTEs are mature (TRL-7 and above) in DoD operating environments but must be assessed in the Homeland operational environment. The initial BD21 program TRA completed in Q4 FY 2021 assessed the Sensor, Collector, and Field Screening Device CTEs at TRL-6, the Control Module CTE at TRL-5, and the Anomaly Algorithm CTE at TRL-3. Additional guidance instructed the BD21 program to conduct additional technology maturation efforts to ensure all CTEs are assessed at TRL-6. Based on that direction, the BD21 program identified representative Control Module and Anomaly Algorithm candidates that could be expected to meet requirements for TRL-6 and initiated an integrated system proof of concept demonstration that will enable effective CTE assessment.

Transition Plans
N/A

Project Schedule

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
FY 2021			
Program completes required acquisition document artifacts, to include CEBD, LCCE, TEMP, P-ILSP, P-APB, SELC-TP, Acquisition Plan.	FY 2021 Q1	FY 2023 Q3	3-6
Program conducts initial Technology Readiness Assessment for CTE maturation	FY 2021 Q2	FY 2021 Q4	3-6
FY 2022			
Program conducts technology maturation efforts for Sensor, Control Module, and Anomaly Algorithm CTEs	FY 2022 Q1	FY 2023 Q2	3-6
Program conducts indoor system proof of concept demonstration	FY 2022 Q2	FY 2022 Q3	3-6
Program conducts updated Technology Readiness Assessment for indoor system concept	FY 2022 Q3	FY 2022 Q4	5-6
Program conducts technology maturation efforts for Sensor, Control Module, and Anomaly Algorithm CTEs	FY 2022 Q1	FY 2023 Q2	3-6
FY 2023			

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
Program conducts integrated indoor/outdoor system proof of concept demonstration	FY 2023 Q2	FY 2023 Q3	5-6
Program conducts updated Technology Readiness Assessment for complete indoor/outdoor system concept	FY 2023 Q3	FY 2023 Q3	6
Program develops draft RFP for acquisition of a system design and development prime contractor	FY 2023 Q3	FY 2024 Q3	6
Program completes/coordinates review of above documents with JRIMS, prepares for ADE-2A Gate Review, and passes gate to enter Obtain Phase	FY 2023 Q3	FY 2023 Q4	8
Release Request for Proposal (RFP) expected to award system design and development contractors to 3 vendors for competitive system acquisition and solution downselect	FY 2023 Q4	FY 2024 Q1	6
Program conducts integrated indoor/outdoor system proof of concept demonstration	FY 2023 Q2	FY 2023 Q3	5-6

CWMD Information Architecture (IA)/GATE-U

- **Problem:** The need to collect, maintain, secure, and share diverse data sets is growing to support CWMD's countering-WMD mission. The threat to data security is also ever changing. The CWMD Office lacks a common platform for advanced data analytics and data pattern recognition, and a common platform to securely store, analyze, and archive large data sets, such as from sensor networks.

- **Solution:** The CWMD GATE-U environment will provide a common platform to gather, integrate, analyze, and disseminate information to CWMD partners to anticipate, prevent, and respond to public health concerns and WMD threats to the homeland. The GATE-U environment can support an interconnected system-of-systems approach capable of integrating disparate data streams and information sources to identify unique indicators of threats to the homeland based on WMD activity or public health concerns. The GATE-U will disseminate operationally relevant results to Federal, State, local, and international partners. In FY 2023, the prior Cognitive Sensor Network cloud technology and additional solutions will continue to be integrated within the Gate-U environment.

- **Justification:** With a common platform, CWMD will have an agile environment for the development of security protocols and tools to leverage data into actionable information to support the CWMD mission. The FY 2023 funding will continue the development of the cloud-based environment. Additionally, the FY 2023 Budget also includes funding in the O&S Appropriation in order to support operational efforts that have transitioned from development to operational use.

- **Impact:** Completion of this project will support expansion of the quality and breadth of information available to complete data-driven CWMD missions. It is expected to save cost and time by automating data analysis and promote integration between programs and DHS Components.

Type of Research
Developmental

Technology Readiness Level
TRLs 6-7

Transition Plans
The GATE-U environment will likely span development and operations due to the ever-changing threats and the growing need to collect, store, combine, and transmit data and information. Upon completion of the development efforts, the operations will transition to the appropriate operational Components with support by the GATE-U engineering team.

Project Schedule

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
FY 2021			
Operate IOC capabilities, Definition and development of Full Operational Capability	FY 2021 Q1	FY 2021 Q4	6
FY 2022			
Continued development of the GATE-U environment to support addition of advanced analytics tools to the environment. Inclusion of Cognitive Sensor Network technology.	FY 2022 Q1	FY 2022 Q4	7
FY 2023			
Continued development of the GATE-U environment to support addition of advanced analytics tools to the environment. Inclusion of Cognitive Sensor Network technology.	FY 2023 Q1	FY 2023 Q4	7

Advanced Technology Demonstration/Rapid Prototyping

- **Problem:** There is a need to ensure that there are mechanisms in place to transition promising applied research to developmental research in support of future acquisitions. As technologies mature, there is a need to conduct development R&D via an Advanced Technology Demonstration (ATD) or Rapid Prototyping to highlight the potential of the technology in an operational environment to gain operator feedback to inform requirements. As threats evolve and new operational capability gaps become known, it is expected one or more rapid prototype efforts will be needed to quickly and effectively meet emerging operational gaps and requirements.

- **Solution:** The FY 2023 funding will support the development, execution, and documentation of ATD and Rapid Prototyping projects. Since technologies mature at various rates and emerging operational gaps are identified in real-time, the exact nature of the projects is unknown until typically the year of execution. In FY 2021, a project was initiated in response to a DHS operator need to take the Mobile Urban Radiation System (MURS) operational prototype system and further develop it for real-time three-dimensional mapping and R/N source localization. In FY 2022, upon successful demonstration of an applied research project being conducted under Transformational R&D for stand-off chemical detection for parcel screening. Examples of previous successful ATD and Rapid Prototyping projects executed by CWMD include: BD21 Technology Demonstration, Project Archer and Project Krieger for USBP Checkpoints, CBRN Unmanned Ground Vehicle Prototype and Pilot Project, Handheld Trace Chemical Detection Pilot and Handheld Standoff Chemical Detection Pilot.

- **Justification:** When critical/emerging operational gaps are identified, rapid prototyping is critical to meet mission needs quickly. With the requested funding, emerging technologies will mature through the developmental R&D process to support effective transition from promising technology to operational capability. This effort was historically funded under the Rapid Capabilities PPA and is now being funded under the Detection Capability Development PPA.

- **Impact:** ATD/Rapid Prototyping funding will allow CWMD to be responsive to emerging technologies and urgent operational requests. Funding will allow CWMD to be proactive with operational users, industry partners, and inter-agency partners.

Type of Research
Developmental

Technology Readiness Level
TRL 6-7

Transition Plans
As the ATDs and prototypes conclude, the capability may stay with the operational component to provide an interim capability until the final solution to provide the capability is produced, tested, and deployed or the ATD/prototype critical technology elements are transferred to the next phase of development and/or included in a production system.

Project Schedule

Research and Development Description	Planned Start Date	Planned Completion	TRL
FY 2021			
N/A			
FY 2022			
ATD/Prototype(s) based on urgent/emerging capability gaps.	FY 2022 Q1	FY 2022 Q4	6-7
Complete development of Low Profile, LIDAR-Enhanced Mobile Urban Radiation System (LP LEMURS)	FY 2022 Q1	FY 2023 Q3	6
Initiate development of chemical standoff detection deployable prototype for parcel/checkpoint screening.	FY 2022 Q3	FY 2022 Q4	6
FY 2023			
ATD/Prototype(s) based on urgent/emerging capability gaps.	FY 2023 Q1	FY 2023 Q4	6-7
Continue development of chemical standoff detection deployable prototype for parcel/checkpoint screening.	FY 2023 Q1	FY 2023 Q4	6
Continue R&D for the improvement and further development of enhanced biosensors.	FY2023 Q3	FY 2023 Q4	6-7

TIBr HPRDS Objective Resolution (THOR)

- **Problem:** There is a need to improve the efficiency of rad-nuc detection and identification operations in the field and in performing secondary inspections. The current Basic HandHeld (BHH) RIIDs are limited by their detection and identification performance due to limited selection of detection materials available in the marketplace at prices that can be widely deployed. The current CONOPS consists of using the BHH RIIDs and supplementing them with advanced RIIDs for adjudicating sources that BHH cannot identify with certainty. The advanced RIIDs have the necessary identification but are much too expensive to deploy widely. The lack of cost-effective and better performing detection materials available in the marketplace is limiting the end user's efficiency of operations.

- **Solution:** Thallium Bromide RIID detection capability development, referred to as Program THOR is intended to transition this emerging technology from R&D to industry. This will be accomplished by developing TIBr Core Detection Modules (CDMs) and integrating CDMs into technology demonstrator RIIDs to demonstrate key attributes of the new technology. These improved capabilities will enable better detection, as well as better identification or equivalent detection and identification using less detector material and at a lower cost.

- **Justification:** Funding is included in the FY 2023 Budget to develop eight TlBr technology demonstrators (comprised of four different models) to TRL-6, and to position the marketplace to be able to take over the technology to make further refinements of the RIIDs in advance of a next-generation RIID procurement. The program will facilitate acceleration of TlBr technology transition to the marketplace, thereby overcoming "the valley of death." This program will fund industry prototyping of radioisotope detectors with high resolution, as well as greater efficiency and sensitivity for Government evaluation. It will also promote competition of next generation RIIDs for a follow-on CWMD acquisition program. The successful development of a TlBr RIID that has near Advanced Handheld capability at a Basic Handheld price would provide significant benefits to CBP operators. A higher resolution RIID for initial secondary inspection would reduce the number of inconclusive secondary adjudications that would have to be referred to Laboratory and Scientific Services (LSS) for technical reach-back. It could also eliminate the need to deploy and maintain a whole class of expensive Advanced Hand-Held systems. A better RIID system may also reduce the amount of wait time for commercial cargo conveyances to be cleared from secondary inspection.

- **Impact:** Completion of this project will enable early transition of TlBr technology from R&D to commercial off-the-shelf (COTS)-available radioisotope detectors.

Type of Research
Developmental

Technology Readiness Level
Currently TRL-4, with plans to reach TRL-6 by the end of FY 2022. The plan is for vendors to adapt existing RIID designs to incorporate the new detection material.

Transition Plans

This program plans to transition the R&D TlBr effort to industry once it reaches TRL-6. The project is in the initial planning phase and initiated engagement with RIID industry partners in Q3 FY 2021.

Project Schedule

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
FY 2021			
Laboratory Development of TlBr subassembly (Conducted under Transformational R&D).	FY 2020 Q1	FY 2021 Q4	5
FY 2022			
Design and development of TlBr Brassboard.	FY 2021 Q1	FY 2021 Q2	4
Vendor Demonstration of Brassboard.	FY 2022 Q1	FY 2022 Q2	4
Preliminary Design of the TlBr Technology Demonstrator RIID.	FY 2022 Q2	FY 2022 Q2	4
FY 2023			
Completion of the TlBr Technology Demonstrator RIID.	FY 2023 Q2	FY 2023 Q1	4
Vendor testing of the TlBr Technology Demonstrator RIID.	FY 2023 Q3	FY 2023 Q3	5
Government testing of the TlBr Technology Demonstrator RIID.	FY 2023 Q4	FY 2023 Q4	6

CWMD Sensor Integration

- **Problem:** Since the terrorist attacks on September 11th, tens of thousands of CBRN detection devices have been deployed across the United States. However, these detection devices have not been able to integrate into a network that can collect, analyze, and distribute real-time information from deployed devices due to technological limitations. CWMD needs to establish the ability to collect, analyze, and distribute near real-time information from deployed detection devices, including legacy devices, to better protect the homeland.

- **Solution**: Recent detection and communication technology improvements provide an opportunity to network many CBRN sensors to provide a greatly enhanced real-time situational awareness system. CWMD will capture data from current and future fielded sensors and analyze that data using advanced algorithms to provide meaningful and actionable CBRN information. This project will expand upon prior research under the Cognitive Sensor Network (CSN) program to demonstrate integration of legacy and future detection technologies and cloud analytics.

- **Justification:** Tens of thousands of detection devices have been deployed to Federal and State, local, tribal, and territorial (SLTT) partners through DHS programs. With increasing processing power and communication capability of these detection devices, CWMD wants to harness the capability to establish an early warning system. Currently, CWMD is transitioning the CSN technology into the GATE-U cloud environment to support an Information Architecture. The office is looking to build upon that CSN activity, further enhancing the interoperability of detection equipment and the capability of cloud analytics. The purpose is to enable the near real-time gathering and distribution of actionable CBRN data that can be analyzed centrally to search for WMD threat signatures.

- **Impact:** Upon completion of this program, CWMD will have demonstrated interoperability and networking of CBRN sensors to support future requirements for detector communications. The CBRN sensors will feed cloud-based analytics in the GATE-U environment, to include machine learning approaches for CBRN anomaly and threat detection.

Type of Research
Developmental

Technology Readiness Level
TRLs 5-6

Transition Plans: Upon completion of the sensor integration demonstration and analytics development, the product will transition into the GATE-U environment, either merging with, or informing changes to the present Cognitive Sensor Network technology. Enhancements in detector networking will inform future equipment acquisitions.

Project Schedule

Research and Development Description	Planned Start Date	Planned Completion	TRL
FY 2021			
N/A			
FY 2022			
Solicitation of R&D to support detector networking and analytics objectives, concluding with a Phase I demonstration.	FY 2022 Q2	FY 2023 Q2	5
FY 2023			
Integration of capability into the GATE-U environment, Phase II, to complement or supplant portions of the prior Cognitive Sensor Network technology.	FY 2023 Q2	FY 2024 Q2	6

Mobile Active Interrogation Using Neutrons (MAIN)

- **Problem:** Current capabilities for scanning conveyances for SNM, drugs, and explosives involve the use of individual platforms and technologies specifically designed to detect either SNM or drugs and explosives. There exists a need for a single platform capable of scanning conveyances for multiple items of concern to DHS components and SLLT partners.

- **Solution:** Development and demonstration of a mobile, one sided system using neutron interrogation to scan conveyances for SNM, drugs, and explosives in both CBP and TSA applications. In FY 2021, the program continued integration activities and system development. In FY 2022, the program will complete initial technology demonstrations and Test Readiness Reviews (TRL-6) and will go through Technology Demonstration and Characterization (TD&C) events. In FY 2023, the program will initiate spiral development (TRL-7) using carryover funds from FY 2022. These funds have been carried over due to delays in the program resulting from the ongoing COVID-19 pandemic.

- **Justification:** Funding in the FY 2023 Budget for this research initiative will be used for spiral development of the developed capability for both CBP and TSA applications. This includes spiral development of hardware and algorithms for the optimized system.

- **Impact:** Completion of this project will result in a demonstration of a technology for scanning conveyances for SNM, drugs, and explosives in both CBP and TSA applications.

Type of Research
Developmental

Technology Readiness Level
TRL's 5-7

Transition Plans
Technologies developed under the MAIN project will transition to a future acquisition supporting TSA and CBP applications.

Project Schedule

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
FY 2021			
Begin system integration and initial testing at the Vendor Development Test site.	FY 2021 Q3	FY 2021 Q4	5
FY 2022			

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
Complete integration of component technologies in preparation for Vendor Development Tests.	FY 2022 Q3	FY 2022 Q3	6
Test Readiness Reviews and Technology Demonstration and Characterization (TD&C) planning.	FY 2021 Q1	FY 2022 Q3	6
Technology demonstration and characterization (TD&C).	FY 2022 Q3	FY 2022 Q4	7
FY 2023			
Initiate spiral development and integration of hardware and algorithms for optimized system leading to data collection and analysis.	FY 2023 Q1	FY 2023 Q3	7

Next Generation Mobile Systems

- **Problem:** Due to the aged and obsolete state of the currently deployed mobile Radiation Portal Monitors (mRPM), CBP has a requirement to recapitalize the current mRPM fleet with a more agile capability that also supports surge operations with improved efficacy, ease of set up, function of multiple units, and more effective transport and deployment to other POEs when required.

- **Solution**: To develop, test, and acquire next generation mobile systems in support of CBP with an enhanced capability using a modular, open systems-based, agile, surge capable mobile R/N scanning asset to detect and classify R/N threat sources and weapon components that may be smuggled into the U.S. CWMD will leverage the investment in Radiation Portal Monitor Replacement Program (RPM-RP) detectors for integration into a new vehicular and/or movable platform that meets operational requirements.

- **Justification**: While still being used, the current fleet of 61 mRPM is obsolete, has greatly exceeded the planned life expectancy since being deployed in 2005, and does not meet the current operational requirements. CBP has a requirement to recapitalize the full mRPM fleet of 61 systems.

- **Impact**: Mobile systems are essential to protecting the homeland from radiological and nuclear threats and to the ability of CBP to continue to perform its radiation scanning mission. The next generation mobile systems will provide CBP with critical radiation scanning capability through replacement of the current aged mRPM fleet with more agile and surge capable systems.

Type of Research
Developmental

Technology Readiness Level
TRLs 7

Transition Plans
The program is transitioning to PC&I.

Project Schedule

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
FY 2021			
Complete market research and capability assessment.	FY 2021 Q1	FY 2021 Q4	N/A

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
Complete requirements/CONOPS documentation.	FY 2021 Q1	FY 2021 Q4	N/A
FY 2022			
Continue acquisition artifact and acquisition strategy development.	FY 2022 Q1	FY 2022 Q4	N/A
FY 2023			
Potential procurement of initial/prototype systems.	FY 2022 Q1	FY 2023 Q3	7
Assess extent of, and conduct as needed, system integration and testing.	FY 2022 Q1	FY 2023 Q4	7

Radiation Portal Monitor (RPM) Recapitalization (RAPTER)

- **Problem:** Since 2003, DHS has deployed approximately 1,400 RPM systems within the US, with an original estimated operational life of 10 to 13 years. The majority of the deployed RPMs have surpassed their intended design life. Due to the age of the deployed systems, a number of known obsolescence issues exist: limited state of health reporting, no automatic gain stabilization, no automatic calibration, excessive nuisance alarms, and limited capability to inform users when systems are no longer operating within the required performance envelope.

- **Solution:** Radiation Portal Monitor (RPM) Recapitalization (Radiation Portal Technology Enhancement & Replacement (RAPTER) will recapitalize the RPM fleet. CWMD is developing requirements and strategy to allow multi-vendor competion for design & development and for an open system architecture that will simplify long-term life-cycle support of the new systems.

- **Justification:** This developmental effort will improve threat detection efficacy, reduce nuisance alarms, establish high levels of reliability, reduce sustainment costs, and allow better integration and co-location with CBP Non-Intrusive Inspection (NII) systems. In addition, an open system architecture will provide a means to easily upgrade the system if new threat vectors emerge or technology innovation becomes available.

- **Impact:** RAPTER will develop, acquire, and deploy 1,400 new RPM systems to recapitalize the existing fleet of aged RPMs, maintaining nearly 100 percent R/N screening of conveyances entering the U.S. at land and seaports of entry and overcome significant obsolescence issues.

Type of Research
Developmental

Technology Readiness Level
The basic component technologies to be included in the RPM Recapitalization Program have all been proven and deployed in operationally representatives test environments. A proof-of-concept system has been developed and tested in a relevant environment. This system needs to be commercialized and then validated against CBP operational requirements. Thus, the TRL is currently estimated to be at level 6, and the program will advance it to level 7 per the project schedule below.

Transition Plans
Once RAPTER systems have been designed and developed, and system requirements have been verified through developmental and operational testing, the activities will shift to the acquisition phase.

Project Schedule

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
FY 2021			
Program schedule adjusted to incorporate completion of ADE-1 and Alternatives Analysis	FY 2021 Q3	FY 2021 Q4	N/A
FY 2022			
Program completes required acquisition document artifacts for ADE-1; ROM, TRB, CAR, MNS, CDP, CRRM.	FY 2021 Q3	FY 2022 Q3	NA
Complete ADE-1 and enter Analyze and Select Phase	FY 2022 Q3	FY 2022 Q3	N/A
Program completes required acquisition document artifacts for ADE-1; ROM, TRB, CAR, MNS, CDP, CRRM.	FY 2021 Q3	FY 2022 Q3	NA
FY 2023			
Complete upgrades to proof-of-concept system	FY 2022 Q3	FY 2023 Q3	6
Complete Alternatives Analysis	FY 2022 Q4	FY 2023 Q3	N/A
Complete upgrades to proof-of-concept system	FY 2022 Q3	FY 2023 Q3	6

Rapid Capabilities – PPA
Budget Comparison and Adjustments
Comparison of Budget Authority and Request
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Rapid Capabilities	$10,000	-	-	-
Total	**$10,000**	**-**	**-**	**-**
Subtotal Discretionary - Appropriation	$10,000	-	-	-

PPA Level I Description

The Rapid Capabilities program enables CWMD to execute expedited and/or sensitive acquisition development and procurement activities for CBRN detection systems in response to emerging operational needs across the CWMD mission space. A quickly evolving threat environment can outpace traditional capability acquisition processes and timelines and make the Nation vulnerable to WMD attack and/or impede response to an attack. The Rapid Capabilities activities (pilots, tech demos, operational demos, studies, etc.) place prototype capabilities in the field for operator use to support their mission and/or accelerate knowledge to support future missions.

Data from Rapid Capabilities activities are used by other efforts (such as software development and testing) to accelerate their development and/or lower programmatic risk. Specifically, with prototype data programs will have access to real-world data to document performance vs relying on studies or models to predict performance. This research initiative enables the study, identification, development, and deployment of pilots, tech demos, operational demos capabilities in the field to gain operational insights earlier in the system acquisition process for capabilities addressing rapidly evolving threats.

Funding for this R&D program will strengthen operational capabilities to prevent, protect against, and respond to WMD and pandemic threats and strengthen national scanning for emerging dangers via robust R&D. Rapid Capabilities initiatives implement FAR-based acquisition procedures; however, the program may also utilize DHS and CWMD-specific acquisition authorities to rapidly develop, procure and field capabilities that disrupt terrorist attempts to utilize WMD. Funding is not requested for this PPA in FY 2023. The activities previously accomplished in the Rapid Capabilities PPA will occur in the Detection Capability Development PPA, specifically in the ATD/Rapid Prototyping project line as shown in the FY 2022 President's Budget.

Rapid Capabilities – PPA
Budget Authority and Obligations
(Dollars in Thousands)

	FY 2021	FY 2022	FY 2023
Enacted/Request	**$10,000**	-	-
Carryover - Start of Year	$1,961	$5,854	-
Recoveries	$47	-	-
Rescissions to Current Year/Budget Year	-	-	-
Net Sequestered Resources	-	-	-
Reprogramming/Transfers	-	-	-
Supplementals	-	-	-
Total Budget Authority	**$12,008**	**$5,854**	-
Collections - Reimbursable Resources	$150	-	-
Collections - Other Sources	-	-	-
Total Budget Resources	**$12,158**	**$5,854**	-
Obligations (Actual/Estimates/Projections)	$6,257	$5,854	-
Personnel: Positions and FTE			
Enacted/Request Positions	-	-	-
Enacted/Request FTE	-	-	-
Onboard and Actual FTE			
Onboard (Actual/Estimates/Projections)	-	-	-
FTE (Actual/Estimates/Projections)	-	-	-

Rapid Capabilities – PPA
Summary of Budget Changes
(Dollars in Thousands)

	Positions	FTE	Amount
FY 2021 Enacted	-	-	$10,000
FY 2022 President's Budget	-	-	-
FY 2023 Base Budget	-	-	-
FY 2023 Request	-	-	-
FY 2022 TO FY 2023 Change	-	-	-

Rapid Capabilities – PPA
Non Pay Budget Exhibits
Non Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
21.0 Travel and Transportation of Persons	$65	-	-	-
25.1 Advisory & Assistance Services	$1,496	-	-	-
25.3 Other Purchases of goods and services	$1,445	-	-	-
25.5 Research & Development Contracts	$6,994	-	-	-
Total - Non Pay Budget Object Class	**$10,000**	**-**	**-**	**-**

Research and Development
Research and Development Projects
Summary of Projects
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
Rapid Capabilities	$10,000	-	-

Rapid Capabilities
Research and Development
Technology Readiness Level Exhibit
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
Rapid Capabilities	$10,000	-	-

R&D Project Description

The rapid capabilities development through this program will make the Nation more prepared and resilient to defend against WMD attacks and to respond if an attack occurs. Additionally, the lessons learned by operating pre-production equipment greatly informs follow-on programs of record to ensure technical and operational requirements are met and CONOPS to support the capability are quickly matured.

The table that follows identifies and summarizes the initiatives and funding levels. No funding is requested for these initiatives in FY 2023. Details on the projects are outlined in the narrative below.

Rapid Capabilities *(Dollars in Thousands)*			
Project	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget
BD21 Tech Demo	$2,000	-	-
Future New Starts Based on Operator Requirements	$8,000	-	-
TOTAL	**$10,000**	**-**	**-**

BD21 Tech Demo

- **Problem:** DHS has documented several biological detection gaps, with the most critical gap being timeliness to detect, confirm, and respond to a biological attack. Other identified gaps include: Environment Coverage, Geographic Coverage, Incident Parameters, Program Standardization Guidance, and Centralized Surveillance Information Management. The BD21 Acquisition Program (Program of Record) is seeking to advance existing biological detection capabilities utilizing real-time data collection combined with data analytics to explore anomaly detection to detect biological threats in urban environments.

- **Solution:** The BD21 Technology Demonstration is an effort designed to gather information and data to support future requirements for an advanced biological detection capability and the development of an anomaly detection algorithm. The effort includes: the exploration of the current state of bio-detection technology, collection of environmental background data in diverse geographical locations to support an anomaly detection algorithm, and CONOPS maturation. Outputs of the BD21 technology demonstrations inform anomaly detection algorithm research and development, support completion of an Alternatives Analysis, and in so doing support the completion of requirements definition necessary to advance the BD21 Program through the DHS Acquisition Lifecycle Framework, in accordance with DHS Acquisition Management Directives by providing performance data regarding existing sensor technologies and data from relevant operational environments in order to evaluate the potential for improvements/solutions.

- **Justification:** There is no funding in the FY 2023 Budget for this initiative.

- **Impact:** Completion of this project will inform the BD21 Program of Record by providing data to support requirement generation, software development and assess performance of available technologies.

Type of Research
Developmental

Technology Readiness Level
TRLs 6-7

Transition Plans
Information from the BD21 Technology Demonstration will inform future operational requirements for the BD21 Acquisition (Program of Record).

Project Schedule

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
FY 2021			
Begin a new effort to gain additional data in different environments.	FY 2021 Q1	FY 2021 Q4	7
FY 2022			
N/A			
FY 2023			
N/A			

Future New Starts Based on Operator Requirements

- **Problem:** The CBRN threat to the Homeland is continuously evolving/changing. CWMD must be positioned and prepared to act quickly and decisively to develop solutions that address these emerging threats and the requirements needed to counter them.

- **Solution:** As threats evolve and new operational capability gaps become known, it is expected one or more new projects will be initiated by the Rapid Capabilities Division to quickly and effectively close emerging operational gaps and meet new requirements. Some examples may include the development of Unmanned Systems integrated with CBRN sensors, chemical detection capabilities with increased standoff capabilities to increase the safety and lower the risk to frontline officers and first responders, integrated multi-threat detection capabilities and the transition of lower TRL R&D projects or other new technologies into fieldable prototypes, operational evaluations and beyond.

- **Justification:** There is no funding in the FY 2023 Budget for this research initiative.

- **Impact:** Completion of this project will reduce operational capability gaps and mature technology to provide frontline officers and first responders with increased capabilities to safely and more effectively execute their mission.

Type of Research
Developmental

Technology Readiness Level
TRL 6-7

Transition Plans
Transition will vary based upon the type of activity. It is likely transition will be CBRN detection hardware to support operational gaps but results of operational evaluations could also transition to support requirements generation.

Project Schedule

Research & Development Description	Planned Start Date	Planned Completion	TRL Level(s)
FY 2021			
New starts to address critical operational gaps that require a rapid response	FY 2021 Q1	FY 2021 Q4	6-7
FY 2022			
N/A			
FY 2023			
N/A			

Department of Homeland Security

Countering Weapons of Mass Destruction

Federal Assistance

Fiscal Year 2023

Congressional Justification

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Federal Assistance
Budget Comparison and Adjustments
Comparison of Budget Authority and Request
(Dollars in Thousands)

	FY 2021 Enacted			FY 2022 President's Budget			FY 2023 President's Budget			FY 2022 to FY 2023 Total Changes		
	Pos.	FTE	Amount	Pos.	FTE	Amount	Pos.	FTE	Amount	Pos.	FTE	Amount
Training, Exercises, and Readiness	-	-	$14,470	-	-	$19,251	-	-	$19,559	-	-	$308
Securing the Cities	-	-	$24,640	-	-	$30,040	-	-	$34,628	-	-	$4,588
Biological Support	-	-	$30,553	-	-	$83,657	-	-	$84,996	-	-	$1,339
Total	**-**	**-**	**$69,663**	**-**	**-**	**$132,948**	**-**	**-**	**$139,183**	**-**	**-**	**$6,235**
Subtotal Discretionary - Appropriation	-	-	$69,663	-	-	$132,948	-	-	$139,183	-	-	$6,235

The Department of Homeland Security Countering Weapons of Mass Destruction (CWMD) Office exists to protect the American people and the homeland from the dangers posed by hostile state and non-state actors who would acquire and use nuclear, chemical, radiological, or biological materials in the form of weapons of mass destruction (WMD) to harm Americans or U.S. interests. The CWMD Office performs its mission through building prevention and detection capabilities and preparing communities to respond.

The CWMD Office supports the frontline operations of its State, local, tribal and territorial partners. This office addresses critical vulnerabilities to help local communities prepare and build capacity in detecting, identifying, responding to, and mitigating nuclear, chemical, radiological, biological, and pandemic threats and incidents. With the Federal Assistance appropriation and mission, CWMD aligns operational programs and activities across the WMD threat space and allows for consistent and persistent engagement. Our established partnerships with local jurisdictions, DHS operating components, and interagency operators further the enhancement needed to protect against an attack toward the people, territory, or interests of the United States.

Federal Assistance
Budget Authority and Obligations
(Dollars in Thousands)

	FY 2021	FY 2022	FY 2023
Enacted/Request	**$69,663**	**$132,948**	**$139,183**
Carryover - Start of Year	$21,530	$3,364	-
Recoveries	$5,694	-	-
Rescissions to Current Year/Budget Year	-	-	-
Net Sequestered Resources	-	-	-
Reprogramming/Transfers	-	-	-
Supplementals	-	-	-
Total Budget Authority	**$96,887**	**$136,312**	**$139,183**
Collections - Reimbursable Resources	$217	$217	$217
Collections - Other Sources	-	-	-
Total Budget Resources	**$97,104**	**$136,529**	**$139,400**
Obligations (Actual/Estimates/Projections)	$93,653	$136,529	$139,400
Personnel: Positions and FTE			
Enacted/Request Positions	-	-	-
Enacted/Request FTE	-	-	-
Onboard and Actual FTE			
Onboard (Actual/Estimates/Projections)	-	-	-
FTE (Actual/Estimates/Projections)	-	-	-

Federal Assistance
Collections – Reimbursable Resources
(Dollars in Thousands)

	FY 2021 Enacted			FY 2022 President's Budget			FY 2023 President's Budget		
	Pos.	**FTE**	**Amount**	**Pos.**	**FTE**	**Amount**	**Pos.**	**FTE**	**Amount**
Department of Homeland Security - Management Directorate	-	-	$217	-	-	$217	-	-	$217
Total Collections	**-**	**-**	**$217**	**-**	**-**	**$217**	**-**	**-**	**$217**

Federal Assistance
Summary of Budget Changes
(Dollars in Thousands)

	Positions	FTE	Amount
FY 2021 Enacted	**-**	**-**	**$69,663**
FY 2022 President's Budget	**-**	**-**	**$132,948**
FY 2023 Base Budget	**-**	**-**	**$132,948**
Total Technical Changes	**-**	**-**	**-**
Total Transfers	**-**	**-**	**-**
BioWatch Inflation Adjustments	-	-	$1,339
Training, Exercise, and Readiness	-	-	$308
Total Pricing Changes	**-**	**-**	**$1,647**
Total Adjustments-to-Base	**-**	**-**	**$1,647**
FY 2023 Current Services	**-**	**-**	**$134,595**
Securing the Cities	-	-	$4,588
Total Program Changes	**-**	**-**	**$4,588**
FY 2023 Request	**-**	**-**	**$139,183**
FY 2022 TO FY 2023 Change	**-**	**-**	**$6,235**

Federal Assistance
Justification of Pricing Changes
(Dollars in Thousands)

	FY 2023 President's Budget		
	Positions	**FTE**	**Amount**
Pricing Change 1 - BioWatch Inflation Adjustments	**-**	**-**	**$1,339**
Biological Support	-	-	$1,339
Pricing Change 2 - Training, Exercise, and Readiness	**-**	**-**	**$308**
Training, Exercises, and Readiness	-	-	$308
Total Pricing Changes	**-**	**-**	**$1,647**

Pricing Change 1 – BioWatch Inflation Adjustments: This pricing change reflects Biowatch operating costs largely associated with daily field sample collection, laboratory staffing, purchases of critical reagents and other supplies/consumables for field and lab operations, and the staffing associated with the quality assurance program.

Pricing Change 2 – Training, Exercise and Readiness: This pricing change reflects Training, Exercise, and Readiness operating costs largely associated with transportation, exercise implementation, chemical toolkit development, and the staffing associated with training and materials management.

Federal Assistance
Justification of Program Changes
(Dollars in Thousands)

	FY 2023 President's Budget		
	Positions	**FTE**	**Amount**
Program Change 1 - Securing the Cities	-	-	**$4,588**
Securing the Cities	-	-	$4,588
Total Program Changes	-	-	**$4,588**

Program Change 1 – Securing the Cities:

Description

The FY 2023 Budget includes an increase of $4.6M for the Securing the Cities program (STC) to expand support of regionalization efforts as outlined in National Security Presidential Memorandum 36 (NSPM-36). The base for the STC program is $30M.

Justification

The funding for the Securing the Cities Program will be used to continue expanding regional efforts that allow STC program partners to detect, identify, and interdict radiological or nuclear materials along pathways immediately around and into cities, in support of FBI efforts and compliance with NSPM-36. This funding also continues efforts begun in FY 2022 to allow the sustainment of capability development in 13 implementation sites. The additional $4.6M will be used to support equipment procurement, development of local protocols, and fund training and exercises required to ensure the STC cities have a defense-in-depth operational capability for Radiological and Nuclear (R/N) detection. Funding is consistent with the projections provided to Congress in the STC Implementation Plan.

Performance

At the requested funding level, the STC program will be able to continue implementation, sustainment and expansion within the 14 high-risk urban areas (13 STC implementation sites), which are aligned to Federal Bureau of Investigation (FBI) Level-V Render Safe Teams as part of comprehensive counter-R/N detection operations. STC will continue to pursue a regionally coordinated R/N detection approach to provide the defense-in-depth posture needed to support State and locals through detection equipment, training, exercise support, operational and technical subject matter expertise, and programmatic support through a cooperative agreement process with eligible regions. As STC builds capability within a high-risk urban area the Nation buys down risk. Greater risk reduction is achieved as this capability (equipment, coordination, training, etc.) is pushed further out into the pathways leading to the city core.

Federal Assistance
Non Pay Budget Exhibits
Non Pay Summary
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Training, Exercises, and Readiness	$14,470	$19,251	$19,559	$308
Securing the Cities	$24,640	$30,040	$34,628	$4,588
Biological Support	$30,553	$83,657	$84,996	$1,339
Total	**$69,663**	**$132,948**	**$139,183**	**$6,235**
Subtotal Discretionary - Appropriation	$69,663	$132,948	$139,183	$6,235

Non Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
21.0 Travel and Transportation of Persons	$240	$378	$618	$240
23.3 Communications, Utilities, & Miscellaneous	-	$7	$14	$7
25.1 Advisory & Assistance Services	$18,575	$45,839	$45,440	($399)
25.2 Other Services from Non-Federal Sources	-	$2,559	$2,558	($1)
25.3 Other Purchases of goods and services	$95	$2,095	$2,204	$109
25.7 Operation & Maintenance of Equipment	$125	$2,187	$3,982	$1,795
26.0 Supplies & Materials	-	$22,100	$21,894	($206)
31.0 Equipment	$9,075	$13,748	$17,066	$3,318
41.0 Grants, Subsidies, and Contributions	$41,553	$44,035	$45,407	$1,372
Total - Non Pay Budget Object Class	**$69,663**	**$132,948**	**$139,183**	**$6,235**

Training, Exercises, and Readiness – PPA
Budget Comparison and Adjustments
Comparison of Budget Authority and Request
(Dollars in Thousands)

	FY 2021 Enacted			FY 2022 President's Budget			FY 2023 President's Budget			FY 2022 to FY 2023 Total Changes		
	Pos.	FTE	Amount	Pos.	FTE	Amount	Pos.	FTE	Amount	Pos.	FTE	Amount
Training, Exercises, and Readiness	-	-	$14,470	-	-	$19,251	-	-	$19,559	-	-	$308
Total	**-**	**-**	**$14,470**	**-**	**-**	**$19,251**	**-**	**-**	**$19,559**	**-**	**-**	**$308**
Subtotal Discretionary - Appropriation	-	-	$14,470	-	-	$19,251	-	-	$19,559	-	-	$308

PPA Level I Description

Training, Exercises, and Readiness programs provide support to local jurisdictions and DHS operating components to reduce the risk of a deployment of a weapon of mass destruction and the movement of chemical, biological, radiological, nuclear materials within the homeland. This includes readiness programs and activities that provide mission-related training, exercises, technical assistance, subject matter expertise, and capability enhancement for local jurisdictions and DHS component personnel to support preparedness for chemical, biological, radiological, nuclear, and pandemic events. This PPA consists of three separate programs: Training and Exercises, Mobile Detection Deployment Program (MDDP), and Chemical Support.

Training and Exercises: CWMD's Training and Exercise Division provides training and exercise tools, resources, and support to develop, improve, and sustain CWMD capability of our operational partners. The Training Program establishes procedures and processes for an integrated program within CWMD and with partner chemical, biological, radiological, and nuclear (CBRN) agencies, which include contracts or interagency agreements for external training. Training enhances skill proficiency and interoperability of operators tasked with countering the weapons of mass destruction threat. This team ensures the availability of high quality and standardized training in both classroom and field settings through access to specialized CWMD curriculum, support to course delivery, and the latest facilitation/training methods through the implementation of training standards.

Training is followed by a robust exercise capability that allows partner agencies to evaluate the effectiveness of their detection capabilities in an actual operating environment outside of the classroom. The Exercise Program complements the Training Program to help Federal, State, and local responders and operators to identify strengths and weakness in performance, and report findings. Robust exercises gauge the overall effectiveness of plans and procedures, promotes readiness, maximizes capabilities of operators, while building operational capability and individual confidence required to perform the CWMD mission. Exercises seek to validate and enhance capabilities and systems essential to counter threats of terrorism using weapons of mass destruction. This is accomplished by providing a range of support service expertise to operational partners and stakeholders, including technical assistance in direct support of SLTT to enable their planning, design, execution, and evaluation of exercises and the integration of

their capabilities with Federal partners. These proven exercise practices are all in accordance with the Homeland Security Exercise and Evaluation Program (HSEEP) methodology and are used to strengthen operator and jurisdictional capability. The level of direct support provided for the planning, design, execution, and evaluation of exercises is dependent upon the stakeholder's level of knowledge and experience in conducting the CWMD mission, as well as the availability of resources to the requesting stakeholder.

Mobile Detection Deployment Program (MDDP): The mission of the MDDP is to augment and supplement CBRN detection and reporting capabilities for Federal, State, local, tribal, and territorial (FSLTT) authorities.

MDDP has six Mobile Detection Deployment Units (MDDUs) located throughout the U.S. that are outfitted with an extensive suite of advanced CBRN detection equipment. This equipment augments domestic law enforcement and first responder capabilities to detect illegal storage, assembly, or transport of harmful chemical and/or biological agents, radiological and nuclear (R/N) material, and devices such as nuclear weapons, components of nuclear weapons, improvised nuclear devices, and radionuclides that can be used to manufacture a Radiological Dispersal Device or Radiological Exposure Device. The MDDP's CBRN detection equipment, along with communications and training tools, provides essential training delivered under the supervision of CWMD. MDDP assets are integrated into operating agency CBRN detection activities designed to provide early detection and response capabilities to mitigate potential or actual illicit use of CBRN materials. MDDP support can range from day-to-day surge operations to intelligence or incident-driven search operations. MDDP support can occur across the following deployment postures: Steady State, Enhanced Steady-State, and Radiological/Nuclear Search Operations.

Chemical Support: Chemical Support develops and supports efforts that enable and empower SLTT partners and DHS components towards preventing, protecting against and rapidly responding to chemical incidents. In support of this mission, Chemical Support strategically provides assistance towards advising, supporting, and collaborating to provide technical expertise to FSLTT and other Homeland Security Enterprise (HSE) partners on current, emerging and forecasted threats, vulnerabilities, impacts, health security, and other chemical support concerns. Chemical Support also procures the necessary data, generates requirements, and conducts policy impact analysis through the lens of the frontline responder and develops evidence-based, validated technological, and non-technological solutions which target gaps and emergent needs.

Chemical Support engages directly with jurisdictions, using the Integrated Chemical Defense Assessment Toolkit, a complex community-wide preparedness process to identify a region's most effective opportunities to reduce risks and provide technical assistance to build a comprehensive, layered defense against chemical threats. These efforts lead to and support the development of new or augment existing programs such as training and exercises, and other assistance to enhance resilience of the homeland security enterprise, including the evaluation of projects and activities to determine effectiveness, eliminate redundancies, and verify a chain of accountability.

Training, Exercises, and Readiness – PPA
Budget Authority and Obligations
(Dollars in Thousands)

	FY 2021	FY 2022	FY 2023
Enacted/Request	**$14,470**	**$19,251**	**$19,559**
Carryover - Start of Year	$1,365	$1,460	-
Recoveries	$3,777	-	-
Rescissions to Current Year/Budget Year	-	-	-
Net Sequestered Resources	-	-	-
Reprogramming/Transfers	-	-	-
Supplementals	-	-	-
Total Budget Authority	**$19,612**	**$20,711**	**$19,559**
Collections - Reimbursable Resources	-	-	-
Collections - Other Sources	-	-	-
Total Budget Resources	**$19,612**	**$20,711**	**$19,559**
Obligations (Actual/Estimates/Projections)	$18,152	$20,711	$19,559
Personnel: Positions and FTE			
Enacted/Request Positions	-	-	-
Enacted/Request FTE	-	-	-
Onboard and Actual FTE			
Onboard (Actual/Estimates/Projections)	-	-	-
FTE (Actual/Estimates/Projections)	-	-	-

Training, Exercises, and Readiness – PPA
Summary of Budget Changes
(Dollars in Thousands)

	Positions	FTE	Amount
FY 2021 Enacted	-	-	**$14,470**
FY 2022 President's Budget	-	-	**$19,251**
FY 2023 Base Budget	-	-	**$19,251**
Total Technical Changes	-	-	-
Total Transfers	-	-	-
Training, Exercise, and Readiness	-	-	$308
Total Pricing Changes	-	-	**$308**
Total Adjustments-to-Base	-	-	**$308**
FY 2023 Current Services	-	-	**$19,559**
Total Program Changes	-	-	-
FY 2023 Request	-	-	**$19,559**
FY 2022 TO FY 2023 Change	-	-	**$308**

Training, Exercises, and Readiness – PPA
Non Pay Budget Exhibits

Non Pay Summary
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Training, Exercises, and Readiness	$14,470	$19,251	$19,559	$308
Total	**$14,470**	**$19,251**	**$19,559**	**$308**
Subtotal Discretionary - Appropriation	$14,470	$19,251	$19,559	$308

Non Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
21.0 Travel and Transportation of Persons	$130	$145	$265	$120
25.1 Advisory & Assistance Services	$14,120	$14,327	$14,327	-
25.2 Other Services from Non-Federal Sources	-	$2,559	$2,558	($1)
25.3 Other Purchases of goods and services	$95	$2,095	$2,204	$109
25.7 Operation & Maintenance of Equipment	$125	$125	$205	$80
Total - Non Pay Budget Object Class	**$14,470**	**$19,251**	**$19,559**	**$308**

Non Pay Cost Drivers

(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Total Changes
Training and Exercises	$5,253	$7,492	$7,613	$121
Mobile Detection Deployment Program	$6,759	$6,759	$6,866	$107
Chemical Support	-	$5,000	$5,080	$80
Information Coordination and Continuity	$2,458	-	-	-
Total - Non-Pay Cost Drivers	**$14,470**	**$19,251**	**$19,559**	**$308**

Explanation of Non Pay Cost Drivers

Training and Exercise: In coordination with Federal training partners and across CWMD, Training and Exercise covers field training operation, travel, advisory assistance contracts, and establishing interagency agreements with partners such as DOE and FEMA. Additionally, funding provides training to SLTT first responders with necessary material needed for training at the FBI's Hazardous Devices School (HDS), and for other FSLTT partners with the movement and management of special nuclear material (SNM) and Chem/Bio source material to support technical assistance training in the field. Training and Exercises also provides funding for course design and development with partners such as the Center for Domestic Preparedness (CDP) and with the Department of Energy affiliate Counterterrorism Operations Support (CTOS). The CWMD Exercise Program in coordination with CWMD program offices, provides exercise support to SLTT partners participating in programs such as Securing the Cities and BioWatch and the integration of their capabilities with Federal partners. These exercises range from jurisdictional proficiency drills to full-scale exercises.

Mobile Detection Deployment Program: MDDP includes the initial costs for Interagency Agreements with USCG, TSA, and CBP for storage of the MDDU fleet, in addition to costs for spectral analysis, detection equipment operations and maintenance, advisory and assistance services, support contractors, and upgrades to the MDDU fleet. The requested funding ensures the MDDP capability can provide domestic law enforcement and first responder organizations with the resources necessary to conduct the full spectrum of radiological and nuclear detection (i.e., primary screening, secondary screening, and reach back procedures). The Mobile Detection Operations Vehicle (MDOV) package will provide necessary CBRN detection equipment, mobile telecommunications, training, operations support, and power generation required for the on-site management of detection support activities.

Chemical Support: The program provides funding for various efforts such as provision of technical assistance to State and local public safety authorities during training, exercises and steady-state operations to enhance readiness to chemical threats. Further, funding is used to support initial operational analyses and deployment of mitigative materiel and non-materiel solutions during major special events and incidents in coordination with

other CWMD programs and units. This also supports travel expenditures and contract staffing to enable development, deployment and implementation, and monitoring of such Federal assistance nationwide. In the FY 2022 President's Budget, funding for Chemical Support ($3M) was transferred from CWMD's O&S appropriation. An additional $2M for additional Chemical Support activities was also added in FY 2022**.**

Information Coordination and Continuity: This program was moved in the FY 2022 President's Budget to the C&OS PPA in CWMD's O&S appropriation.

Securing the Cities – PPA
Budget Comparison and Adjustments
Comparison of Budget Authority and Request
(Dollars in Thousands)

	FY 2021 Enacted			FY 2022 President's Budget			FY 2023 President's Budget			FY 2022 to FY 2023 Total Changes		
	Pos.	FTE	Amount	Pos.	FTE	Amount	Pos.	FTE	Amount	Pos.	FTE	Amount
Securing the Cities	-	-	$24,640	-	-	$30,040	-	-	$34,628	-	-	$4,588
Total	**-**	**-**	**$24,640**	**-**	**-**	**$30,040**	**-**	**-**	**$34,628**	**-**	**-**	**$4,588**
Subtotal Discretionary - Appropriation	-	-	$24,640	-	-	$30,040	-	-	$34,628	-	-	$4,588

PPA Level I Description

Securing the Cities: Through the Securing the Cities (STC) program, the CWMD Office enhances the ability of the United States to detect and prevent terrorist attacks and other high-consequence events utilizing nuclear or other radiological materials that pose a risk to homeland security in high-risk urban areas. STC is a critical component of the CWMD Office's defense-in-depth strategy to maximize detection opportunities from the furthest distance practicable to the intended target area. STC includes regionally located program offices, equipment procurement, developing and integrating the STC partner programs into a national detection structure, and guiding the development of contingency operations and standard operating procedures. The CWMD Office also provides training and exercise support, funding, and equipment via cooperative agreements to ensure that radiological detection is integrated into day-to-day operations.

Securing the Cities – PPA
Budget Authority and Obligations
(Dollars in Thousands)

	FY 2021	FY 2022	FY 2023
Enacted/Request	**$24,640**	**$30,040**	**$34,628**
Carryover - Start of Year	$17,176	$708	-
Recoveries	$904	-	-
Rescissions to Current Year/Budget Year	-	-	-
Net Sequestered Resources	-	-	-
Reprogramming/Transfers	-	-	-
Supplementals	-	-	-
Total Budget Authority	**$42,720**	**$30,748**	**$34,628**
Collections - Reimbursable Resources	-	-	-
Collections - Other Sources	-	-	-
Total Budget Resources	**$42,720**	**$30,748**	**$34,628**
Obligations (Actual/Estimates/Projections)	$41,931	$30,748	$34,628
Personnel: Positions and FTE			
Enacted/Request Positions	-	-	-
Enacted/Request FTE	-	-	-
Onboard and Actual FTE			
Onboard (Actual/Estimates/Projections)	-	-	-
FTE (Actual/Estimates/Projections)	-	-	-

Securing the Cities – PPA
Summary of Budget Changes
(Dollars in Thousands)

	Positions	FTE	Amount
FY 2021 Enacted	-	-	**$24,640**
FY 2022 President's Budget	-	-	**$30,040**
FY 2023 Base Budget	-	-	**$30,040**
Total Technical Changes	-	-	-
Total Transfers	-	-	-
Total Pricing Changes	-	-	-
Total Adjustments-to-Base	-	-	-
FY 2023 Current Services	-	-	**$30,040**
Securing the Cities	-	-	$4,588
Total Program Changes	-	-	**$4,588**
FY 2023 Request	-	-	**$34,628**
FY 2022 TO FY 2023 Change	-	-	**$4,588**

Securing the Cities – PPA
Non Pay Budget Exhibits
Non Pay Summary
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Securing the Cities	$24,640	$30,040	$34,628	$4,588
Total	**$24,640**	**$30,040**	**$34,628**	**$4,588**
Subtotal Discretionary - Appropriation	$24,640	$30,040	$34,628	$4,588

Non Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
21.0 Travel and Transportation of Persons	$110	$113	$113	-
25.1 Advisory & Assistance Services	$4,455	$4,455	$4,455	-
31.0 Equipment	$9,075	$12,478	$17,066	$4,588
41.0 Grants, Subsidies, and Contributions	$11,000	$12,994	$12,994	-
Total - Non Pay Budget Object Class	**$24,640**	**$30,040**	**$34,628**	**$4,588**

Non Pay Cost Drivers
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Total Changes
Equipment	$10,340	$5,345	$17,241	$11,896
Regional Program Management	$2,100	$11,645	$7,008	($4,637)
Backfill and Overtime	$8,874	$6,891	$4,732	($2,159)
Other Costs	$3,326	$6,159	$5,647	($512)
Total - Non-Pay Cost Drivers	**$24,640**	**$30,040**	**$34,628**	**$4,588**

Explanation of Non Pay Cost Drivers

Equipment: This funding supports new equipment procurement as well as operations and maintenance of fielded assets. Starting in FY 2021, CWMD requires equipment funding for eight of the newer regions (implementing initial capability), as well as, recapitalization of aging equipment in the five legacy regions. As STC partners further regionalize their capabilities (i.e. expansion into multiple States, counties, localities and major transportation pathways leading to core urban areas), additional equipment will need to be procured for their respective regional partners. This is all in an effort to support the defense-in-depth posture and increase probability of detection.

Regional Program Management: These are costs associated with maintaining the 13 regional offices which include salaries for the program manager and staff, as well as, office space in some cases. Previous year funding accounts for the start up costs associated with standing up 13 regional offices. The 13 established/operational offices are no longer in need of start up funding, which reflects the 40% cost reduction.

Backfill and Overtime: The funding for this effort supports initial training of personnel in new STC cities and continued initial and refresher training for cities in the sustainment phase to maintain their level of capability. This level of funding supports the continuation of training to the 14 high-risk urban areas (13 STC implementation sites), as well as, regional partners as R/N Detection capability gets pushed out along pathways into the respective high risk urban areas. It is anticipated that initial training for the majority of the 8 additional regions will be taking place in FY 2022 so the 31% reduction in costs reflects less of a need for backfill and overtime hours for training in FY 2023.

Other Costs: CWMD requires support contractors to develop and administer the STC program. CWMD also has other costs with program administration, such as contracts to support wireless networks and a Global Information Infrastructure providing a common operating picture to Federal, State, and local agencies for STC regions.

Biological Support – PPA
Budget Comparison and Adjustments
Comparison of Budget Authority and Request
(Dollars in Thousands)

	FY 2021 Enacted			FY 2022 President's Budget			FY 2023 President's Budget			FY 2022 to FY 2023 Total Changes		
	Pos.	FTE	Amount	Pos.	FTE	Amount	Pos.	FTE	Amount	Pos.	FTE	Amount
Biological Support	-	-	$30,553	-	-	$83,657	-	-	$84,996	-	-	$1,339
Total	**-**	**-**	**$30,553**	**-**	**-**	**$83,657**	**-**	**-**	**$84,996**	**-**	**-**	**$1,339**
Subtotal Discretionary - Appropriation	-	-	$30,553	-	-	$83,657	-	-	$84,996	-	-	$1,339

PPA Level I Description

The Biological Support PPA encompasses CWMD Office efforts to detect and safeguard against biological threats. These activities provide early warning and characterization of significant biological events and provide local jurisdictions and fielded DHS component personnel with support and guidance to effectively address biological threats in both steady-state and surge operational postures. Biological support is routinely delivered through BioWatch steady-state and special event detection operations across the country. In the FY 2022 President's Budget, CWMD consolidated funds into a single appropriation of Federal Assistance funds for better program execution at the State and local levels and more agile response to emerging biothreats. This aligns logistic supplies/consumables and quality assurance efforts with supported field collection and laboratory operations and consolidates all laboratory staffing and waste management into one PPA.

As the Nation's primary biodetection capability, BioWatch provides early warning of bioterrorism and helps communities across the Nation prepare to respond. The combination of detection, rapid notification, preparedness, and planning helps Federal, State, and local decision-makers take steps to save lives and mitigate consequences. While centrally managed by the CWMD Office, the program is locally operated by a network of scientists, laboratory technicians, emergency managers, law enforcement officers, and public health officials. In each of the 30+ BioWatch jurisdictions, collectors draw air through filters to capture particles and field technicians transport those filters to labs, where scientists process and analyze the samples for evidence of biological threat agents. Following the completion of testing, labs dispose of biological waste safely through certified handlers. In the event a threat is identified, BioWatch alerts Federal, State, and local subject matter experts and decision-makers using a robust notification system. Spanning the entire local collection and testing cycle is a rigorous quality assurance program that ensures the overall reliability and accuracy of test results for the BioWatch program. This allows decision-makers to respond with confidence in the event of a positive test result. Local field and laboratory operations also require significant logistics support, with the continuous operation and maintenance of portable sampling units and the replenishment of supplies and consumables like air filters and laboratory reagents. In total, the expenses associated with local field and laboratory operations constitute over 90 percent of BioWatch program costs.

Biological Support – PPA
Budget Authority and Obligations
(Dollars in Thousands)

	FY 2021	FY 2022	FY 2023
Enacted/Request	**$30,553**	**$83,657**	**$84,996**
Carryover - Start of Year	$2,989	$1,196	-
Recoveries	$1,013	-	-
Rescissions to Current Year/Budget Year	-	-	-
Net Sequestered Resources	-	-	-
Reprogramming/Transfers	-	-	-
Supplementals	-	-	-
Total Budget Authority	**$34,555**	**$84,853**	**$84,996**
Collections - Reimbursable Resources	$217	$217	$217
Collections - Other Sources	-	-	-
Total Budget Resources	**$34,772**	**$85,070**	**$85,213**
Obligations (Actual/Estimates/Projections)	$33,570	$85,070	$85,213
Personnel: Positions and FTE			
Enacted/Request Positions	-	-	-
Enacted/Request FTE	-	-	-
Onboard and Actual FTE			
Onboard (Actual/Estimates/Projections)	-	-	-
FTE (Actual/Estimates/Projections)	-	-	-

Biological Support – PPA
Collections – Reimbursable Resources
(Dollars in Thousands)

	FY 2021 Enacted			FY 2022 President's Budget			FY 2023 President's Budget		
	Pos.	**FTE**	**Amount**	**Pos.**	**FTE**	**Amount**	**Pos.**	**FTE**	**Amount**
Department of Homeland Security - Management Directorate	-	-	$217	-	-	$217	-	-	$217
Total Collections	**-**	**-**	**$217**	**-**	**-**	**$217**	**-**	**-**	**$217**

Biological Support – PPA
Summary of Budget Changes
(Dollars in Thousands)

	Positions	FTE	Amount
FY 2021 Enacted	-	-	**$30,553**
FY 2022 President's Budget	-	-	**$83,657**
FY 2023 Base Budget	-	-	**$83,657**
Total Technical Changes	-	-	-
Total Transfers	-	-	-
BioWatch Inflation Adjustments	-	-	$1,339
Total Pricing Changes	-	-	**$1,339**
Total Adjustments-to-Base	-	-	**$1,339**
FY 2023 Current Services	-	-	**$84,996**
Total Program Changes	-	-	-
FY 2023 Request	-	-	**$84,996**
FY 2022 TO FY 2023 Change	-	-	**$1,339**

Biological Support – PPA
Non Pay Budget Exhibits
Non Pay Summary
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
Biological Support	$30,553	$83,657	$84,996	$1,339
Total	**$30,553**	**$83,657**	**$84,996**	**$1,339**
Subtotal Discretionary - Appropriation	$30,553	$83,657	$84,996	$1,339

Non Pay by Object Class
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Change
21.0 Travel and Transportation of Persons	-	$120	$240	$120
23.3 Communications, Utilities, & Miscellaneous	-	$7	$14	$7
25.1 Advisory & Assistance Services	-	$27,057	$26,658	($399)
25.7 Operation & Maintenance of Equipment	-	$2,062	$3,777	$1,715
26.0 Supplies & Materials	-	$22,100	$21,894	($206)
31.0 Equipment	-	$1,270	-	($1,270)
41.0 Grants, Subsidies, and Contributions	$30,553	$31,041	$32,413	$1,372
Total - Non Pay Budget Object Class	**$30,553**	**$83,657**	**$84,996**	**$1,339**

Non Pay Cost Drivers
(Dollars in Thousands)

	FY 2021 Enacted	FY 2022 President's Budget	FY 2023 President's Budget	FY 2022 to FY 2023 Total Changes
Field Collection	$30,553	$31,041	$32,413	$1,372
Logistics Supplies and Consumables	-	$22,772	$22,556	($216)
Laboratory Staffing and Waste Management	-	$14,854	$15,092	$238
Quality Assurance and Program Office	-	$11,929	$12,056	$127
Other Costs	-	$3,061	$2,879	($182)
Total - Non-Pay Cost Drivers	**$30,553**	**$83,657**	**$84,996**	**$1,339**

Explanation of Non Pay Cost Drivers

Field Collection: The program uses cooperative agreements with State and local jurisdictions to operate and maintain biodetection capabilities, including personnel for the collection and delivery of detection unit samples to laboratories, maintenance of the detection equipment, and coverage of additional resources as needed for special events in existing jurisdictions. Note: In seven jurisdictions, funds also support laboratory staff through the same cooperative agreement (7 of 29 labs).

Logistic Supplies and Consumables: Provides local field operations with a supply of air filters and collector spare parts. Provides jurisdiction laboratories with sample testing supplies, critical reagents, and other consumables.

Laboratory Staffing and Waste Management: Funds laboratory staff and biological waste costs needed to process air samples in all but seven local jurisdiction BioWatch labs (22 of 29 labs).

Quality Assurance and Program Office: The Quality Assurance advisory and assistance service provides proficiency testing and audits of State and local field and lab operators to ensure the overall reliability and accuracy of sample test results. Program Office advisory and assistance service coordinates among State and local authorities within and across jurisdictions to integrate and exercise the field collection, laboratory analysis, incident reporting, supply chain logistics, and quality assurance functions and administer the BioWatch program.

Other Costs: Other costs include information technology (e.g., communications portal, air sample tracking tool, laboratory information management system, incident notification system), equipment upgrades to network collector arrays, and official Federal travel to local jurisdictions and special events to monitor program performance.